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FILE NO.

SERVICE MANUAL

Remote Control Digital Color Television

HT27547 (U.S.A.) (CANADA)

ORIGINAL VERSION



Chassis No. 27547-02

NOTE: Match the Chassis No. on the unit’s back cover with the Chassis No. in the Service Manual.

If the Original Version Service Manual Chassis No. does not match the unit’s, additional Service Literature is required. You **must** refer to “Notices” to the Original Service Manual prior to servicing the unit.

Servicing should be performed by only trained and qualified service personnel.

Contents

Specifications

Power Rating 120V, 60Hz
85W (Avg), 2.5A (Max)
Antenna Input Impedance 75Ω
UHF/VHF/CATV
Digital
Receiving Channel . . . . 2 - 13 (VHF),
14 - 69 (UHF),
01, 14 - 94, 95 - 125 (CATV)
1 - 99 (Digital)
Remote Ready . . . . 32 Key Remote Control
Sound Output . . . . 1.0 W/CH
Intermediate Frequency
Picture IF Carrier. 45.75MHz
Sound IF Carrier 41.25MHz
Color Sub Carrier 42.17MHz
Picture Tube A68QFN793X001
Semiconductors
Integrated Circuits 13
Transistors. 30
Except within Tuners, RC Pre-Amp. & Digital Module
Cabinet Dimensions
Width. . . . . 770 mm
Height . . . . 585 mm
Depth. . . . . 496 mm

HT27547, H3DSA, PRODUCT CODE 113007988

REFERENCE No. SM780140

SAFETY INSTRUCTIONS

SAFETY PRECAUTIONS

WARNING: The chassis of this receiver has a floating ground with the potential of one half the AC line voltage in respect to earth ground. Service should not be attempted by anyone not familiar with the precautions necessary when working on this type of equipment.

The following precautions must be observed:

1. An isolation transformer must be connected in the power line between the receiver and the AC line before any service is performed on the receiver.
2. Comply with all caution and safety-related notes provided on the side of the cabinet, inside the cabinet, on the chassis, and the picture tube.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as control knobs, adjustment covers, shields and barriers.
4. Before replacing the back cover of the set, thoroughly inspect the inside of the cabinet to see that no stray parts or tools have been left inside.

   Before returning any television to the customer, the service technician must perform the following safety checks to be sure that the unit is completely safe to operate without danger of electrical shock.

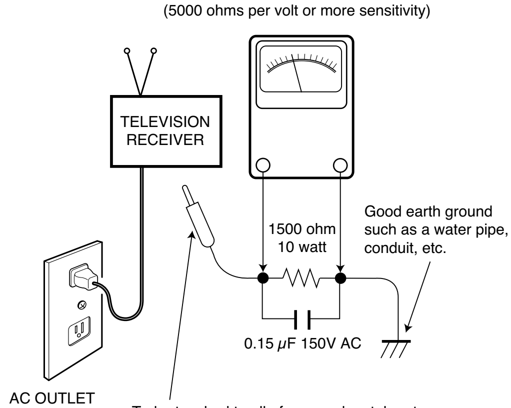
ANTENNA COLD CHECK

Remove AC plug from the 120 VAC outlet and place a jumper across the two blades. Connect one lead of an ohmmeter to the jumpered AC plug, and touch the other lead to each exposed antenna terminal (UHF and VHF antenna terminals). The resistance must measure between 1M ohm and 5.2M ohm. Any resistance value below or above this range indicates an abnormality which requires corrective action.

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120 VAC outlet. (Do not use an isolation transformer for this check.) Use an AC voltmeter, that has 5000 ohms per volt or more sensitivity. Connect a 1500 ohm 10 watt resistor, paralleled by a 0.15 μF 150 VAC capacitor, between a known good earth ground (water pipe, conduit, etc.) and all exposed metal parts of the cabinet (antennas, handle bracket, metal cabinet, screw heads, metal overlays, control shafts, etc.). Measure the AC voltage across the 1500 ohm resistor. The AC voltage should not exceed 750 mV. A reading exceeding 750 mV indicates that a dangerous potential exists. The fault must be located and corrected. Repeat the above test with the receiver power plug reversed.

NEVER RETURN A RECEIVER TO THE CUSTOMER WITHOUT TAKING THE NECESSARY CORRECTIVE ACTION.



Voltmeter Hook-up for Leakage Current Check.

PRODUCT SAFETY NOTICE

When replacing components in a receiver, always keep in mind the necessary product safety precautions. Pay special attention to the replacement of components marked with a ⚠ in the parts list and in the schematic diagrams. To ensure safe product operation, it is necessary to replace those components with the exact same PARTS.

X-RADIATION PRECAUTION

The primary source of X-RADIATION in solid-state receivers is the picture tube. The picture tube is specially constructed to limit X-Ray emission. For continued X-RADIATION protection, the replacement tube must be the same type as the original (including the suffix letter in the part numbers). Excessive high voltage may produce potentially hazardous X-RADIATION. To avoid such hazards, the high voltage must be maintained within specific limits. Refer to the X-RADIATION WARNING NOTE on the CHASSIS SCHEMATIC in this service manual for specific high voltage limits. If the high voltage exceeds specified limits, check the components specified on the chassis schematic diagram and take the necessary corrective action. Carefully follow the instructions for the +B Voltage Check and the High Voltage Check to maintain the high voltage within the specified limits.

HIGH VOLTAGE HOLD-DOWN TEST

To prevent X-RADIATION from the picture tube due to excessive high voltage, a HOLD-DOWN circuit is provided in the high voltage circuit. Every time the receiver is serviced, the high voltage HOLD-DOWN circuit must be tested for proper operation. Refer to the HIGH VOLTAGE HOLD-DOWN TEST in service adjustments.

SERVICING ELECTROSTATICALLY SENSATIVE DEVICES

Semiconductors (solid-state devices) that can be damaged by static electricity are referred to as Electrostatically Sensitive (ES) devices. Examples of typical ES devices are: Integrated Circuits (IC), Field-Effect Transistors (FET), and "chip" components. The following techniques should be observed strictly, to reduce the occurrence of semiconductor damage due to electrostatic discharge.

1. Immediately prior to handling any semiconductor component or an assembly containing a semiconductor device or devices, discharge the electrostatic buildup on your body by touching a known earth ground. You may also obtain and wear a commercially available discharging wrist strap device.

   CAUTION: Be sure to remove the wrist strap before applying power to any unit being serviced.
2. After removing an ES equipped assembly, place it on a conductive surface, such as, aluminum foil, to prevent buildup or exposure to static electricity.
3. Use only grounded-tip soldering irons to solder or unsolder ES devices.
4. Use only anti-static solder removal devices. Some suction-type devices can generate static electricity adequate to damage ES devices.
5. A replacement ES device will come packaged in protective material (conductive foam, aluminum foil, or some comparable conductive material). Do Not remove an ES device from its protective packaging unless you are prepared to install it immediately.
6. Precisely prior to removing an ES device from its protective packaging, touch the protective packaging to the chassis or assembly in which the device will be installed.

   CAUTION: Be sure that no power is applied to the chassis or circuit assembly.
7. Incidental body movements, such as, lifting a foot from a carpeted floor or the rubbing of fabric together can generate static electricity sufficient to damage ES devices. Therefore, minimize all body movements while handling exposed (unpackaged) ES devices.

SERVICE ADJUSTMENTS

GENERAL

This set has an on-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments. To enter the Service Menu, first disconnect the AC power cord. Then while pressing the Volume – key on the **front control panel**, reconnect the AC power cord. The adjustments can now be made with the remote control or front control panel keys.

ON-SCREEN SERVICE MENU SYSTEM

1. Enter the Service Menu:

- While pressing the Volume – key on the **front control panel**, reconnect the AC power cord. The Service Menu Display will now appear. See Figure 1.

2. Service Adjustments:

- Press the **Channel** ▲ or ▼ key to select the desired service menu item you want to adjust. (See page 5 for On-screen Service Menu.)
- Use the **Volume** + or – key or number keys to adjust the data. The + or – keys will increase or decrease the data sequentially. The number keys (0 ~ 7) toggle only their respective bits between 1 and 0 and are used to change the Sub-Address. For example to change bit 5 press the number 5 key. See below.

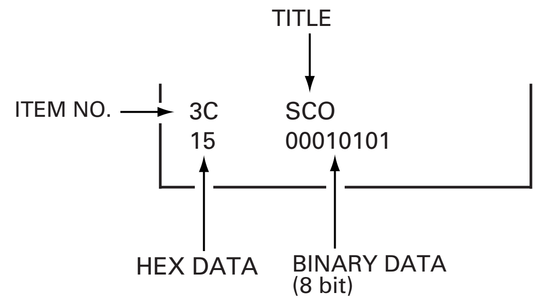
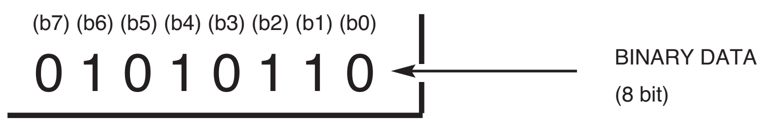


Figure 1. Service Menu Display



3. Exit from the Service Menu:

- Press the MENU key (remote) to turn off the Service Menu display.

NOTE: The ▲ and ▼ symbols used in the following service adjustments refer to the **Channel Up and Down keys** not the Menu keys.

IC802 (EEPROM) REPLACEMENT

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 5 ~ 7, Table 1, for detailed bus data information.)

INITIAL BUS DATA SETUP

Note: When IC802 (EEPROM) is replaced, change the following initial reference data for proper TV operation before attempting service adjustments.

1. Disconnect the AC power cord (AC 120V line).
2. While pressing the Volume – key, reconnect the AC power cord. The Service Menu display will now appear.
3. Select NO. 3C SCO (Sub Color) with ▲ or ▼ key. Adjust the data with + or – key for 15.
4. Select NO. 3D STI (Sub Tint) with ▲ or ▼ key. Adjust the data with + or – key for 26.
5. Select NO. 41 HP (H Phase) with ▲ or ▼ key. Adjust the data with + or – key for 10.
6. Select NO. 42 VS (V Size) with ▲ or ▼ key. Adjust the data with + or – key for 3B.
7. Select NO. 44 HBL5VLN (H Blk L / V Lin) with ▲ or ▼ key. Adjust the data with number keys for 30.

CONTINUED ON PAGE 4

SERVICE ADJUSTMENTS (Cont.)

INITIAL BUS DATA SETUP (Cont.)

8. Select NO. 4C RD (Red Drive) with ▲ or ▼ key. Adjust the data with + or – key for 50.
9. Select NO. 4D GD (Green Drive) with ▲ or ▼ key. Adjust the data with + or – key for 0A.
10. Select NO. 4E BD (Blue Drive) with ▲ or ▼ key. Adjust the data with + or – key for 50.
11. Select NO. 69 EWD (E/W DC) with ▲ or ▼ key. Adjust the data with + or – key for 0F.
12. Select NO. 6A EWA (E/W Amp) with ▲ or ▼ key. Adjust the data with + or – key for 0D.
13. Select NO. 6B EWT (E/W Tilt) with ▲ or ▼ key. Adjust the data with + or – key for 25.
14. Select NO. 6C ECB4ECT (E/W Bottom / E/W Top) with ▲ or ▼ key. Adjust the data with + or – key for 63.
15. Select NO. 8D HR (OSD H Position) with ▲ or ▼ key. Adjust the data with + or – key for 1E.
16. Select NO. 8E SBO (Sub Bright Offset) with ▲ or ▼ key. Adjust the data with + or – key for 05.

17 Select NO. 92 DCL (YUV Color Difference) with ▲ or ▼ key. Adjust the data with + or – key for 00.

18. Select NO. 98 DRY (YUV R-Y Difference) with ▲ or ▼ key. Adjust the data with + or – key for FD.
19. Select NO. 99 DBY (YUV B-Y Difference) with ▲ or ▼ key. Adjust the data with + or – key for FD.
20. Select NO. B1 4AVP2EWA (4:3CRT AV/Comp Pix2 East/West Amp Difference) with ▲ or ▼ key. Adjust the data with + or – key for F9.

17\. Select NO. BA 4DIGP3VBL (4:3 CRT Digital Pix3 V Blk SW) with ▲ or ▼ key. Adjust the data with + or – key for 00.

18\. Press the MENU key (remote) to turn off the Service Menu display.

Table 1. ON-SCREEN SERVICE MENU

When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Reference Data. (See pages 3 and 4 for Initial Bus Data Setup.)

No.	TITLE	INITIAL REFERENCE DATA HEX	INITIAL SETUP DATA HEX	INITIAL SETUP DATA BINARY	FUNCTION
3B	SCN	1F	1F	00011111	Sub Contrast (4~0)
3C	SCO	1A	15*	00011001	Sub Color (5~0)
3D	STI	20	26*	001001110	Sub Tint (4~0)
3E	SB	18	18	00011000	Sub Bright (5~0)
3F	SSH	00	00	00000000	Sub Sharpness (4~0)
40	AFC6HFR	90	90	10010000	AFC(6) Horizontal Frequency (5~0)
41	HP	0B	10*	00010000	Horizontal Phase (4~0)
42	VS	60	3B*	00111011	Vertical Size
43	VSP7VKI6VDC	0A	0A	00001010	V Sync Sep (7) V Kill (6) V DC (5~0)
44	HBL5VLN	2F	30*	00110000	H Blanking L (6~5) V. Linearity (4~0)
45	HBR5VST	41	41	01000001	H Blanking R (6~5 V Shift (3~0)
46	VSC	11	11	00010001	Vertical S Correction (4~0)
47	VTS6VC3CDM	28	28	00101000	V Test (7~6) V Compression (5~3)Count Down Mode (0)
48	FBS4GRY2CRS	10	10	00010000	VNS (7) V Blk (6~5) FBP Blk (4) Gray Mode (2) CRS (1~0)
49	RB	00	00	00000000	Red Bias (7~0)
4A	GB	00	00	00000000	Green Bias (7~0)
4B	BB	00	00	00000000	Blue Bias (7~0)
4C	RD	40	50*	01000000	Red Drive (6~0)
4D	GD	08	0A*	00001000	Green Drive (3~0)
4E	BD	40	50*	01000000	Blue Drive (6~0)
4F	SBI	40	40	01000000	Sub Bias (6~0)
50	↓	↓	↓	↓	Not Used
51	↓	↓	↓	↓	Not Used
52	OSD	03	03	00000011	On Screen Display Contrast (1~0)
53	ABL5MSD4RTS3BAT	1C	1C	00011100	ABL Defeat (5) MID Stop (4) RGB Temp (3) ABL Thresh (2~0)
54	CRG	12	12	00010010	Coring Gain (7~6)
55	STR4FLS	31	31	00110001	S Trap Test (6~4) Y/C Filter Mode (2~0)
56	YAP6PRE4OVR2WP	02	02	00000010	Y APF (6) Pre Shoot (5~4) Over Shoot (3~2) White Peak (1~0)
57	YGM6DCR4BSS2BSG	84	84	10000100	Y Gam (7~6) DC Rest (5~4) B Str Sart (3~2) B Str Gain (1~0)
58	CBT3	80	80	10000000	Cb Trap (7~3)
59	↓	↓	↓	↓	Not Used
5A	↓	↓	↓	↓	Not Used
5B	AF7CBP5	A0	A0	10100000	Auto Flesh (7) C Bypass (5)
5C	CKO	04	04	00000100	Color Killer (2~0)
5D	RYA	08	08	00001000	R-Y/B-Y Angle (3~0)
5E	CBO4CRO	98	98	10011000	Cb DC Offset (7~4) Cr DC Offset (3~0)
5F	GYA3	00	00	00000000	G-Y Angle (3)
60	↓	↓	↓	↓	Not Used
61	FMM5	00	00	00000000	FM Mute (5)
62	IAS7STS6RAD	60	60	01100000	IF AGC (7) S Trap SW (6) RF AGC (5~0)
63	VIF5VL	10	10	00010000	VIF System SW (5) Video Level (4~2)
64	VCO1	80	80	10000000	VCO Freq (7~1)
65	OMS6OML	20	20	00100000	Over Mod SW (6) Over Mod Level (5~2)
66	↓	↓	↓	↓	Not Used
67	VMD6VMG3SSN	22	22	00100010	VM delay (7~6) VM Gain (5~3) Sync Sep Sens(2~0)
68	↓	↓	↓	↓	Not Used
69	EWD	13	0F*	00001111	E/W DC (5~0)
6A	EWA	0F	0D*	00001101	E/W Amp (5~0)
6B	EWT	23	25*	00100101	E/W Tilt (5~0)

SERVICE ADJUSTMENTS (Cont.)

Table 1. ON-SCREEN SERVICE MENU (Continued)

No.	TITLE	INITIAL REFERENCE DATA HEX	INITIAL SETUP DATA HEX	INITIAL SETUP DATA BINARY	FUNCTION
6C	ECB4ECT	62	63*	01100011	E/W Corner Bottom(7~4) E/W Corner Top (3~0)
6D	EWS7ETS3HSC	84	84	10000100	E/W Correction Sw(7) E/W Test (5~3) H Size Comp (2~0)
6E	↓	↓	↓	↓	Not Used
6F	↓	↓	↓	↓	Not Used
80	ATT	07	07	00000111	Attenuation -MTS Input Level (3~0)
81	WDB	20	20	00100000	Wide Band - Low Separation (5~0)
82	SPC	20	20	00100000	Spectral - High Separation (5~3)
83	OPT	00	00	00000000	4:3 or Wide (5)
84	OP2	20	20	00100000	Component(5) V Guide(7)
85	FLR	00	00	00000000	RF Filter System (2~0)
86	CBR	00	00	00000000	RF C Bypass (5)
87	CDR	00	00	00000000	RF Count Down Mode (0)
88	CGR	C0	C0	11000000	RF Coring Gain (6)
89	AFR	00	00	00000000	RF AFC Gain & Gate (6)
8A	ROV	04	04	00000100	RF Over Shoot Adjust (3~2)
8B	RPR	20	20	00100000	RF Pre Shoot Adjust (5~4)
8C	CBT	08	08	00001000	RF C BPF Test (4~3)
8D	HR	1D	1E*	00101110	OSD H Display Position (7~0)
8E	SBO	03	05*	00000101	Sub Bright Offset (5~0)
8F	DFL	02	02	00000010	YUV Filter System (2~0)
90	DCN	00	00	00000000	YUV Sub Contrast (6~0)
91	DBR	00	00	00000000	YUV Sub Bright (6~0)
92	DCL	F8	00*	00000000	YUV Sub Color (6~0)
93	DTN	00	00	00000000	YUV Sub Tint (6~0)
94	DSH	00	00	00000000	YUV Sub Sharpness (6~0)
95	DCG	00	00	00000000	YUV Sub Coring (6)
96	DVG	00	00	00000000	YUV Sub VM Gain (5~0)
97	DHS	00	00	00000000	YUV Sub E/W DC (5~0)
98	DRY	00	FD*	11111101	YUV R-Y Offset (3~0)
99	DBY	00	FD*	11111101	YUV B-Y Offset (7~4)
9A	DYA	00	00	00000000	YUV APF (6)
9B	4ECN	E0	E0	11100000	4:3 CRT PIX2 Contrast (P/S OFF) (6~0)
9C	4EBR	00	00	00000000	4:3 CRT PIX2 Bright (6~0)
9D	4ECL	00	00	00000000	4:3 CRT PIX2 Color (6~0)
9E	16ECN	E0	E0	11100000	16:9 CRT PIX2 Contrast (P/S OFF) (6~0)
9F	16EBR	00	00	00000000	16:9 CRT PIX2 Bright (6~0)
A0	16ECL	00	00	00000000	16:9 CRT PIX2 Color (6~0)
A1	FCN	00	00	00000000	Digital Contrast (6~0)
A2	FBR	00	00	00000000	Digital Bright (6~0)
A3	FCL	00	00	00000000	Digital Color (6~0)
A4	FTN	00	00	00000000	Digital Tint (6~0)
A5	FSH	00	00	00000000	Digital Sharpness (6~0)
A6	SRTM	14	14	00010100	Time out Setting for CH Search
A7	DRV	R40	R40	01000000	Red Drive Adjustment (See Note 1.)
		R40	R40	01000000	Blue Drive Adjustment (See Note 1.)
A8	–	-	-	-	Red Bias Adjustment (See Note 2.)
	CUT OFF–	-	-	-	Green Bias Adjustment (See Note 2.)
	–	-	-		Blue Bias Adjustment (See Note 2.)
A9	4AVP1AFC	00	00	0000000	4:3 CRT AV/Comp PIX1AFC (6)

SERVICE ADJUSTMENTS (Cont.)

Table 1. ON-SCREEN SERVICE MENU (Continued)

No.	TITLE	INITIAL REFERENCE DATA HEX	INITIAL SETUP DATA HEX	INITIAL SETUP DATA BINARY	FUNCTION
AA	4AVP1HP	00	00	00000000	4:3 CRT AV/Comp Pix H Phase (4~0)
AB	4AVP1VST	00	00	00000000	4:3 CRT AV/Comp Pix1 V Shift (3~0)
AC	4AVP2VS	DF	DF	11011111	4:3 CRT AV/Comp Pix2 V Size (6~0)
AD	4AVP2VLN	01	01	00000000	4:3 CRT AV/Comp Pix2 V Lin (4~0)
AE	4AVP2VSC	FD	FD	11111101	4:3 CRT AV/Comp Pix2 V SC (4~0)
AF	4AVP2VBL	60	60	01100000	4:3 CRT AV/Comp Pix2 V BLK SW (4)
B0	4AVP2EWD	00	00	00000000	4:3 CRT AV/Comp Pix2 East/West DC (5~0)
B1	4AVP2EWA	FA	F9*	11111001	4:3 CRT AV/Comp Pix2 East/West Amp (5~0)
B2	4AVP2EWT	00	00	00000000	4:3 CRT AV/Comp Pix2 East/West Trapazoid (5~0)
B3	4AVP2ECT	00	00	00000000	4:3 CRT AV/Comp Pix2 East/West Corner Top (5~0)
B4	4AVP2ECB	00	00	00000000	4:3 CRT AV/Comp Pix2 East/West Corner Bottom (5~0)
B5	4DIGP1HP	00	00	00000000	4:3 CRT DigitalPix1 H Phase (3~0)
B6	4DIGP1VST	00	00	00000000	4:3 CRT DigitalPix1 V Shift (3~0)
B7	4DIGP3VS	00	00	00000000	4:3 CRT DigitalPix3 V Size (6~0)
B8	4DIGP3VLN	00	00	00001000	4:3 CRT DigitalPix3 V Lin (4~0)
B9	4DIGP3VSC	00	00	00000000	4:3 CRT DigitalPix3 V SC (4~0)
BA	4DIGP3VBL	60	00*	00000000	4:3 CRT DigitalPix3 V BLK SW (4)
BB	4DIGP3EWD	00	00	00000000	4:3 CRT DigitalPix3 East/West DC (5~0)
BC	4DIGP3EWA	00	00	00000000	4:3 CRT DigitalPix3 East/West AMP (5~0)
BD	16RFP1VS	00	00	00000000	16:9 CRT RFPix1 V Size (6~0)
BE	16RFP1VLN	00	00	00000000	16:9 CRT RFPix1 V Lin (4~0)
BF	16RFP1HBL	00	00	00000000	16:9 CRT RFPix1 H BLK L(6,5)
C0	16RFP1HBR	00	00	00000000	16:9 CRT RFPix1 H BLK R(6,5)
C1	16RFP1VSC	00	00	00000000	16:9 CRT RFPix1 V SC (4~0)
C2	16RFP1EWD	00	00	00000000	16:9 CRT RFPix1 East/West DC (5~0)
C3	16RFP1EWA	00	00	00000000	16:9 CRT RFPix1 East/West Amp (5~0)
C4	16RFP1EWT	00	00	00000000	16:9 CRT RFPix1 East/West Trapazoid (5~0)
C5	16RFP1ECT	00	00	00000000	16:9 CRT RFPix1 East/West Corner Top (3~0)
C6	16RFP1ECB	00	00	00000000	16:9 CRT RFPix1 East/West Corner Bottom (7~4)
C7	16RFP3VS	00	00	00000000	16:9 CRT RFPix3 V Size(6~0)
C8	16RFP3VLN	00	00	00000000	16:9 CRT RFPix3 V Lin (4~0)
C9	16RFP3VSC	00	00	00000000	16:9 CRT RFPix3 V SC (4~0)
CA	16RFP3EWD	00	00	00000000	16:9 CRT RFPix3 East/West DC (5~0)
CB	16RFP3EWA	00	00	00000000	16:9 CRT RFPix3 East/West Amp (5~0)
CC	16AVP2AFC	00	00	00000000	16:9 CRT AV/Comp Pix2 AFC (6)
CD	16AVP2HP	00	00	00000000	16:9 CRT AV/Comp Pix2 H Phase (4~0)
CE	16AVP2VST	00	00	00000000	16:9 CRT AV/Comp Pix2 V Shift (3~0)
CF	16DIGP2HP	00	00	00000000	16:9 CRT DigitalPix2 H Phase (4~0)
D0	16DIGP2VST	00	00	00000000	16:9 CRT DigitalPix2 V Shift (3~0)
	R00	00	00	00000000	ROM Correction Data
↓	↓	↓	↓	↓	↓
↓	R48↓	↓	↓	↓	ROM Correcetion Data

DRIVE AND BIAS ADJUSTMENTS

Note 1.

Red/Blue Drive Adjustments in Service Menu DRV: Adjust Red and Blue Drive Levels alternately with 1, 3, 7, and 9 keys on the remote control. See Figure 2. The Drive Level adjustment data will be written in the Service Menu No. 4C RD and 4E BD automatically.

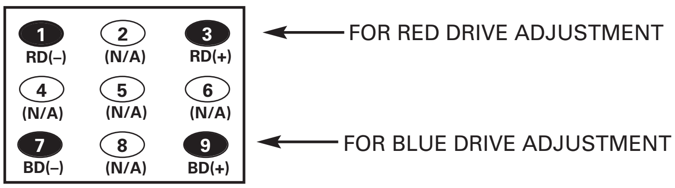


Figure 2.

Note 2.

Red/Green/Blue Bias Adjustments in Service Menu CUT OFF (No Vertical Sweep):

Adjust each Bias Level with 1, 3, 4, 6, 7, or 9 key on the remote control. See Figure 3. The Bias Level adjustment data will be written in the Service Menu No. 49 RB, No. 4A GB, and No. 4B BB automatically.

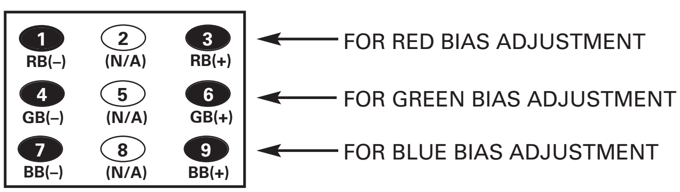


Figure 3.

PROGRAM CODES

The microprossesor used in this model is a multi-purpose type and is used in several different models. To ensure proper operation and the correct features for your particular model, the program codes must be correct.

Note 1. Option Data 1 (NO. 83 OPT) should be hexadecimal 00 (00000000 binary). See page 3 ON-SCREEN SERVICE MENU for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0 ~ 1	TV / HOTEL / MON	N/A	N/A
2	VIDEO MODE	N/A	N/A
3 ~ 4	CLOCK	N/A	N/A
5	ASPECT RATIO	4:3	16:9
6	NOT USED	—	—
7	SURROUND	N/A	N/A

Note 2. Option Data 2 (NO. 84 OP2) should be hexadecimal 20 (00100000 binary). See page 3 ON-SCREEN SERVICE MENU for set up procedure. If this program code is wrong the TV will not operate properly.

BIT	FUNCTION	DATA	
		0	1
0	V-GUIDE	N/A	N/A
1	COLOR ENHANCER	N/A	N/A
2	INITIAL CH & XDS	N/A	N/A
3	NOT USED	—	—
4	PIP	N/A	N/A
5	COMPONENT	NONE	YES
6	BASS & TREBLE / TONE	N/A	N/A
7	GAME	N/A	N/A

SERVICE ADJUSTMENTS (Continued)

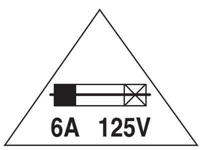
ANTENNA CONNECTIONS

This receiver is designed for UHF/VHF and Digital RF reception. A 75 ohm terminal is provided for UHF/VHF/Digital RF reception. When connecting a CATV antenna system, connect the 75 ohm coaxial cable directly to the 75 ohm terminal. For 300 ohm VHF antenna, use an adapter (not included with the TV set).

CIRCUIT PROTECTION

Fuse F601 (6A) is included in the AC line. This fuse must be replaced with the proper fuse (see Parts List).

CAUTION



FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 6A, 125V FUSE.

ATTENTION : POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D' INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 6A, 125V.

+B VOLTAGE CHECK

1. Connect Voltmeter + lead to TJ1 (130.0 V) and – lead to ground (Power/Deflection board).
2. Connect receiver to AC 120V line.
3. Tune receiver to an active channel.
4. Set the picture controls to the Auto or Reset (use MENU key and ▲ or ▼ key or RESET key).
5. Voltage must measure between 128.0 V and 132.0V.

If the voltage is out of range, the power circuit must be checked. No +B adjustment is provided on this chassis.

HORIZONTAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the horizontal center of TV screen. If picture is not centered horizontally, perform steps 3 - 6.
3. Turn off the receiver and disconnect the AC power cord. (120V AC line)
4. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 41 (HP: Horizontal Phase, Bit 4 ~ 0) with ▲ or ▼ key.
6. Adjust the data with numeric keys for horizontal center. To turn off the Service Menu display, press the MENU key.

HORIZONTAL WIDTH ADJUSTMENT

1. Tune receiver to an active channel.
2. Check the picture for proper width. If width is not correct, perform steps 3 - 6.
3. Turn off the receiver and disconnect the AC power cord.
4. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 69 (EWD: East/West DC Bit 5 ~ 0) with ▲ or ▼ key.
6. Adjust the data with numeric keys for proper width. To turn off the Service Menu display, press the MENU key.

VERTICAL SIZE ADJUSTMENT

1. Tune receiver to an active analog channel.
2. Check the vertical size of the picture. If the vertical size is too large or small, perform steps 3 ~ 6.
3. Turn off the receiver and disconnect the AC power cord.
4. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 42 (VS: Vertical Size, Bit 6 ~ 2) with ▲ or ▼ key.
6. Adjust the data with + or – key for full scan. To turn off the Service Menu display, press the MENU key.

VERTICAL CENTERING ADJUSTMENT

1. Tune receiver to an active channel.
2. Check that picture is in the center of TV screen. If picture center is too low, add resistor R513 (470 ohm 1W). If picture center is too high, add resistor R512 (470 ohm, 1W).

RF AGC ADJUSTMENT

1. Tune receiver to strongest VHF station in your area.
2. Set contrast and brightness controls for maximum.
3. Turn off the receiver and disconnect the AC power cord (120V AC line).
4. While pressing the Volume – key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 62 RAD (RF AGC Delay Bit 5 ~ 0) with ▲ or ▼ key.
6. Adjust the data with + or – key in the direction which causes snow to appear; then in the opposite direction until the snow just disappears.
7. To turn off the Service Menu display, press the MENU key.

VIDEO LEVEL

1. Connect color-bar generator to antenna terminals.
2. Turn off the receiver and disconnect the AC power cord (AC 120V line).
3. Connect oscilloscope to TP16 (Q132 emitter) and ground.
4. While pressing the Menu key, reconnect the AC power cord. The Service Menu will now appear.
5. Select NO. 63 VL (Video Level Bit 4 ~ 2) with the ▲ or ▼ key.
6. Adjust with the number keys (4~2) for an oscilloscope reading of 1.0 ± 0.1 VP-P at TP16. Press the MENU key to turn off the Service Menu display.

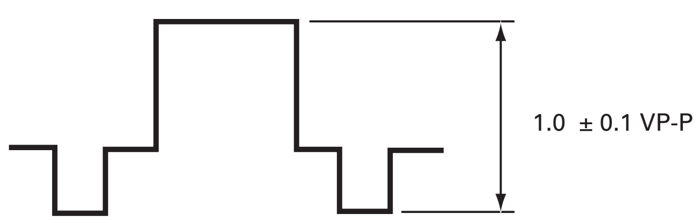


Figure 4.

GRAYSCALE ADJUSTMENT

1. Set the picture controls to the Auto levels or Reset (use MENU key and ▲ or ▼ key or RESET key).
2. Turn off the receiver and disconnect the AC power cord (120V AC line).
3. While pressing the Volume – key, reconnect the AC power cord. The Service Menu display will now appear.
4. Select NO. 49 RB (Red Bias), NO. 4A GB (Green Bias), and NO. 4B BB (Blue Bias) with ▲ or ▼ key and set each data to 00 with + or – key.
5. Select NO. 4C RD (Red Drive) and NO. 4E BD (Blue Drive) with ▲ or ▼ key and set each data to 40 with + or – key.
6. Set NO. 4D GD (Green Drive Reduction) data to 08, NO. 3E SB (Sub-Brightness) data to 18, NO. 3C SCO (Sub Color) data to 15, NO. 3D STI (Sub Tint) to 26, and NO. 3F SSH (Sub Sharpness) data to 00 with ▲ or ▼, and + or – keys.
7. Turn Screen Control (T402) to minimum (fully counter-clockwise).
8. Select the Service Menu Cut Off (No Vertical Sweep) between NO. A5 and NO. A6 with ▲ or ▼ key.
9. Advance Screen Control (T402) clockwise to obtain just visible one color line. If line does not appear, place this control to maximum (fully clockwise).
10. Raise each Bias Level with 3, 6, and 9 keys to obtain just visible white line. See Figure 5.

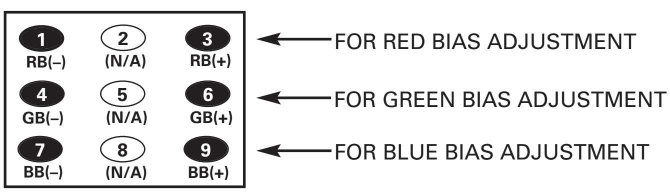


Figure 5. Remote Control Number keys' functions in Service Menu Cut Off (No Vertical Sweep)

11. Select the Service Menu DRV (Drive Adjustments) between NO. A5 and NO. A6 with ▲ or ▼ key.
12. Adjust Red and Blue Drive Levels alternately with 1, 3, 7, or 9 key to produce normal black and white picture in highlight areas. See Figure 6.

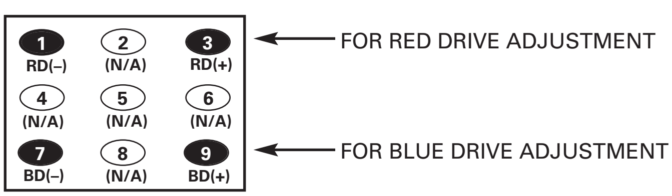


Figure 6. Remote Control Number keys' functions in Service Menu DRV

13. Check for proper grayscale at all brightness levels. To turn off the Service Menu display, press the MENU key.

Note: If Grayscale Adjustment is made after picture tube replacement, check Brightness Level Adjustment.

FOCUS ADJUSTMENT

Adjust focus control (T402) for well defined scanning lines.

HIGH VOLTAGE CHECK

Note: +B (+130.0V) Voltage Check and Grayscale Adjustment must be completed before attempting high voltage Check.

1. Connect high voltage voltmeter – lead to ground, and connect + lead to anode of picture tube.
2. Tune receiver to an active channel and confirm TV is operating properly.
3. Eliminate the beam current by adjusting the contrast and brightness controls to minimum.
4. Confirm high voltage is within 27.8 KV and 32.2 KV. If reading is not within range, check horizontal circuit.

No high voltage adjustment is provided on this chassis.

BRIGHTNESS LEVEL ADJUSTMENT

Note: Grayscale, RF AGC, Video Level, and High Voltage Check must be adjusted before attempting Brightness LevelAdjustment.

1. Connect a color-bar generator to the antenna terminals.
2. Switch the generator to the crosshatch pattern.
3. Reset the picture controls to the Auto levels.
4. Connect voltmeter (high impedance) + lead to terminal TP51 and – lead to terminal TP50 on main board. Set voltmeter for 1.5V ~ 3V range.
5. Turn off the receiver and disconnect the AC power cord.
6. While pressing the Volume – key, reconnect the AC power cord. The Service Menu display will now appear.
7. Select NO. 3E SB (Sub Brightness) with ▲ or ▼ key.
8. Adjust the data with + or – key for 680mVDC.
9. Press the MENU key to turn off the Service Menu display.
10. Check brightness level on every active channel, readjust (repeat steps 5 ~ 9), if necessary.

Note: Do not set to excessive brightness level, otherwise the contrast level will be suppressed.

PURITY AND CONVERGENCE ADJUSTMENTS

Purity and Convergence have been aligned at the factory. No re-alignment is necessary.

SERVICE ADJUSTMENTS (Continued)

SUB COLOR AND SUB HUE ADJUSTMENT

Sub Color

1. Connect a color-bar generator to the analog antenna terminal. Set picture controls to Auto level.
2. Switch the generator to the color-bar (NTSC) pattern.
3. Connect oscilloscope probe to TP35 and ground.
4. Turn off the receiver and disconnect the AC power cord.
5. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu display will now appear.
6. Select NO. 3C (SCO: Sub Color, Bit 5 ~ 0) with ▲ or ▼ key.
7. Set the data with numeric keys 5 ~ 0 for 1.15 ± .15 V p-p. See Figure 7.

Sub Hue (Tint)

8. Select NO. 3D (STI: Sub Tint, Bit 5 ~ 0) with ▲ or ▼ key.
9. Set the data with numeric keys 5 ~0 for waveform shown in Figure 7 (Stair Steps).

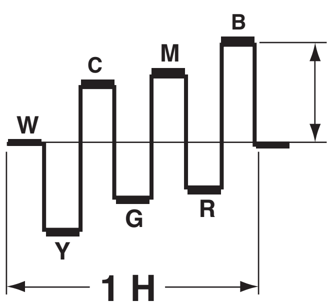


Figure 7. Sub Color

HIGH VOLTAGE HOLD-DOWN TEST

Every time the receiver is serviced, the HIGH VOLTAGE HOLD-DOWN circuit must be tested for proper operation by following these steps:

1. Connect receiver to 120V AC line. Tune receiver to active channel. Reset the picture controls to the Auto level.
2. Check that the voltage measured between TP7 and TE7 (ground side) on the P/D PC board is within 16.5 VDC to 21 VDC. If the voltage is out of this range, the Hold-Down Circuit must be checked.
3. Connect a DC Voltage supply to TP7 and TE7 through a 100 ohm 1/4W resistor. Adjust the DC voltage to 23 VDC. The receiver should shut down, losing raster and sound. Then the receiver should turn off automatically. This reaction indicates that the Hold-Down circuit is functioning properly. If the receiver does not shutdown, a malfunction is indicated and its cause **must** be found and corrected.
4. To obtain picture again, remove the DC Supply and wait a few minutes. Now turn on the receiver.

MULTI-SOUND SECTION ADJUSTMENTS

Note: Multi-Sound Section must be adjusted after A101 (U/V Tuner), IC3401 (MTS Decoder), Digital Module or IC802 (EEPROM) is replaced.

INPUT LEVEL ADJUSTMENT

1. Connect a signal to the analog antenna terminal with audio of 1 KHz 100% modulation.
2. Turn off the receiver and disconnect the AC power cord (AC 120V line).
3. Connect voltmeter (RMS) to TP317 and ground on the Main PC board.
4. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu will now appear.
5. Select NO. 80 (ATT: MTS Input Level) with the ▲ or ▼ key.
6. Adjust the + or – key for a voltmeter reading of 400 ± 20 mVrms at TP317.

SEPARATION ADJUSTMENT

7. Turn off the receiver and disconnect the AC power cord (AC 120V line).
8. Connect oscilloscope CH1 to TP317 and CH2 to TP318 and ground.
9. Connect an MTS TV/Stereo generator to antenna terminal.
10. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu will now appear.
11. Select pilot, 300Hz audio frequency and Left modulating signal.
12. Select NO. 81 (WDB: Wide Band) with the ▲ or ▼ key.
13. Adjust the + or – key for minimum low frequencies at TP317. (See Figure 8.)
14. Select 4 KHz audio frequency and Right modulating signal.
15. Select NO. 82 (SPC: Spectral) with the ▲ or ▼ key.
16. Adjust the + or – key for minimum high frequencies at TP318. (See Figure 8.)

Repeat adjustments (steps 11–16) until no further decreases in amplitude can be obtained. Press the MENU key to turn off the Service Menu display.

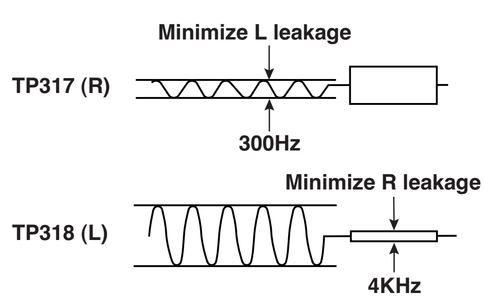
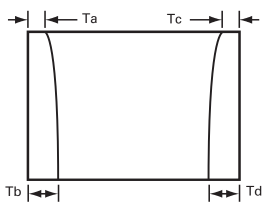


Figure 8. Separation Adjustments

PINCUSHION CORRECTION ADJUSTMENT

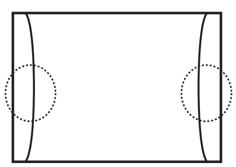
1. Connect a color-bar generator to the antenna terminals and select a crosshatch pattern.
2. Set the picture controls to the Auto level.
3. Turn off the receiver and disconnect the AC power cord (AC 120V line).
4. While pressing the Volume – key, reconnect the AC power cord. The Service Menu will now appear.
5. Select No. 6B EWT with ▲ or ▼ key and adjust with + or – key for equal tilt at top and bottom.



Adjust No. 6B EWT for equal tilt: Ta=Tb, Tc=Td.

Figure 10.

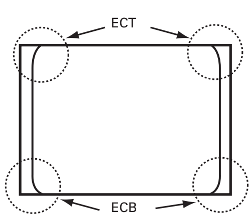
6. Select No. 6A EWA with ▲ or ▼ key and adjust with + or – key for straight vertical lines at the center.



Adjust No. 6A EWA for the center part of the vertical line to be straight.

Figure 11.

7. Select No. 6C ECB4ECT with ▲ or ▼ key and adjust with number keys for straight vertical lines at the top and bottom.



Adjust No. 6C ECB4ECT for straight vertical lines at the top (3 ~ 0) and bottom (7 ~ 4) with the number keys.

Figure 12.

8. Repeat steps 5 through 7 for best pincushion adjustment.
9. Press the MENU key to turn off the Service Menu display.

OSD ADJUSTMENT

1. Connect a color-bar generator to the analog antenna terminal.
2. Set the picture controls to the Auto level.
3. Turn off the receiver and disconnect the AC power cord. (120V AC line)
4. While pressing the VOLUME – key, reconnect the AC power cord. The Service Menu display will now appear.
5. Select NO. 8D (HR: OSD H Position) with ▲ or ▼ key.
6. Adjust the + or – key for proper position shown in Figure 9. To turn off the Service Menu display, press the MENU key

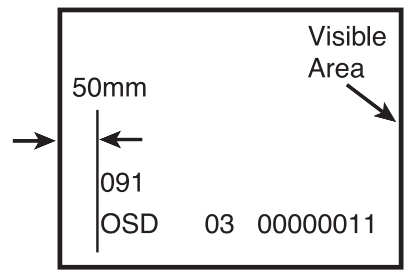


Figure 9.

SERVICE HINTS

POWER FAILURE DETECTOR

This unit is equipped with a Power Failure Detector function included in the CPU which checks for an abnormal condition in the chassis power supplies, including the power supply derived from the Horizontal Output Transformer.

If, while the power is on, a failure is caused by any of the following that results in a low voltage supply, the CPU will turn the unit off in 1.5 seconds to prevent further damage:

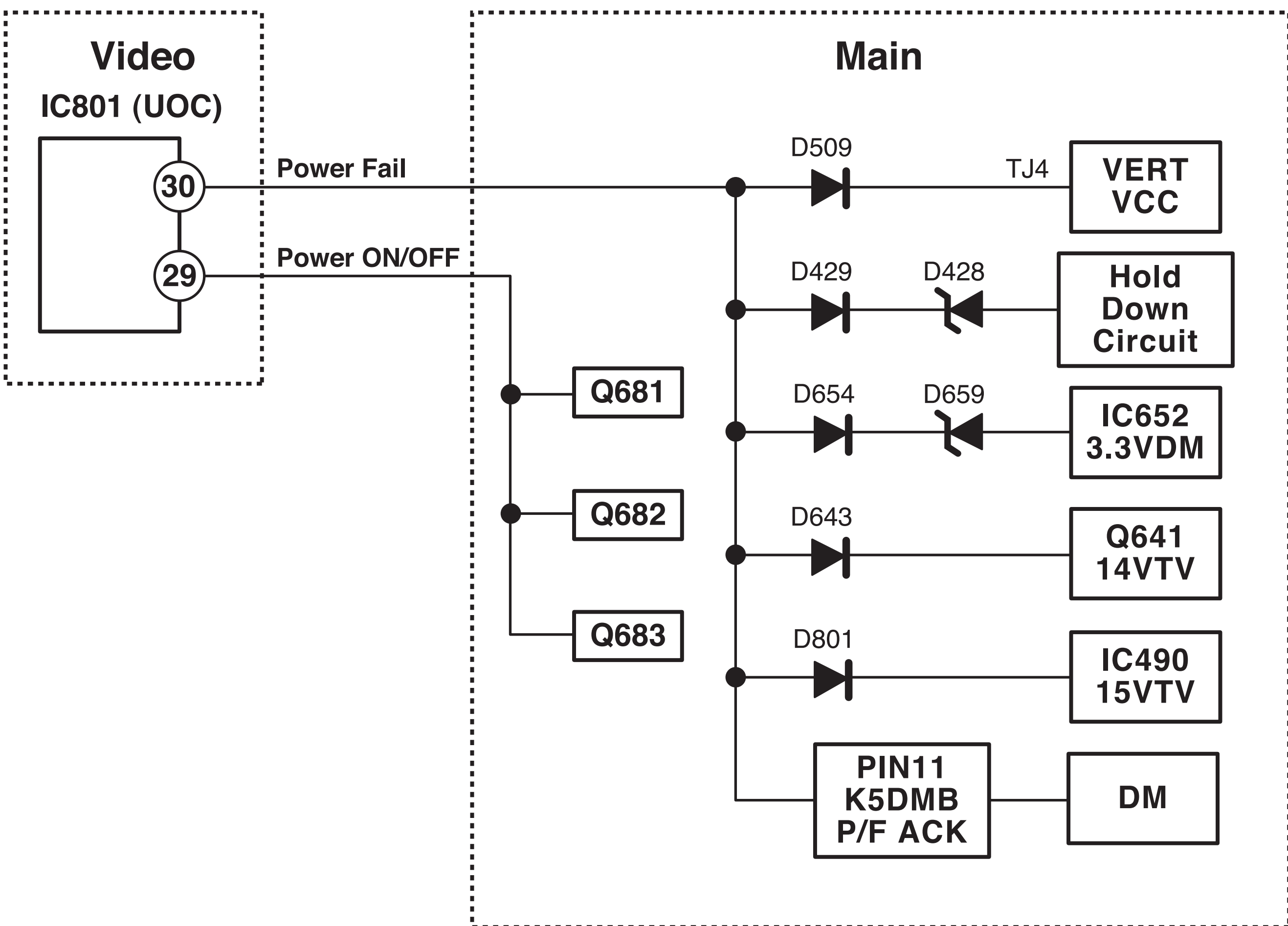
- Failure within the power supply circuits.
- A short circuit in the load side from the supply.
- Stoppage of the Horizontal Output Oscillator caused by the X-Radiation protection Hold-Down Circuit.

If, while the power is off, the power is switched on and any of these failures remains uncorrected, the CPU will shut off the power within three seconds.

Check the following if the unit is turned off by the power failure detector.

1. Disconnect the AC power cord (120V AC line) for at least 10 seconds.
2. Connect a DC Voltmeter to the circuits shown below.
3. Press the Power key and check for the proper voltage supplies.
4. If any of these voltages is low, the power failure detector should turn the unit off within three seconds.
5. Check all circuits shown below.

Note: This unit is equipped with a Power Surge Protection feature included in the CPU. If power failure occurs three times within 15 minutes, the CPU will stop functioning automatically to help prevent secondary damage. (TV will not turn on by pressing the power key.) To reset the operating programs within the CPU, disconnect the AC power cord for at least 10 seconds.



MECHANICAL DISASSEMBLIES

CABINET BACK REMOVAL

1. Refer to Figure 1, remove 12 screws.
2. Pull off cabinet back and remove.

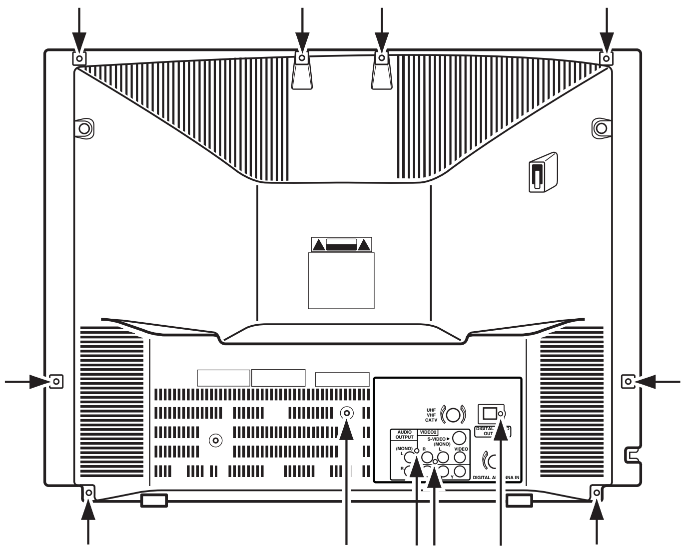


Figure 1. Cabinet Back Removal

CHASSIS REMOVAL

1. Remove cabinet back.
2. Discharge the picture tube anode (2nd anode lead) to the dag coating (picture tube grounding lead).
3. Disconnect degaussing coil socket (KD), picture tube socket, deflection yoke connector (KX), speakers connector (KSP), picture tube ground leads (2) and 2nd anode lead.
4. Remove chassis completely by sliding it straight back.

PICTURE TUBE REMOVAL

CAUTION: Do not disturb the deflection yoke or magnet assembly on the picture tube neck. Care must be taken to keep these assemblies intact, unless picture tube is being replaced. Discharge the picture tube to the coating before handling the tube.

1. Remove chassis, referring to Chassis Removal instructions.
2. Place cabinet's front face down on a soft surface.
3. Remove the screw on each corner of the picture tube and GENTLY lift the picture tube out of the cabinet.
4. Install a replacement picture tube in reverse order. Properly install the degaussing coil and picture tube grounding lead on the picture tube. See Figure 2.

Note: If Picture Tube is being replaced, mount the Degaussing Coil properly on the replacement tube. See Figure 2.

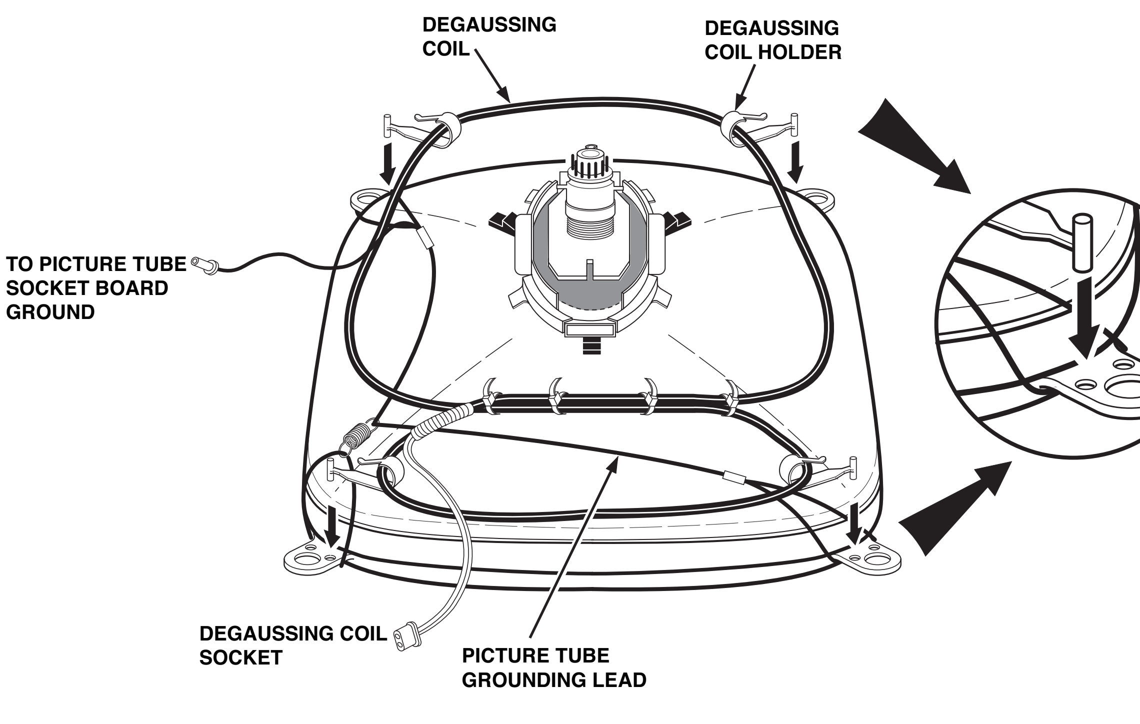


Figure 2. Picture Tube Removal

CHASSIS ELECTRICAL PARTS LIST

CAUTION: To Protect against electrical shock and for continued product safety, refer to SAFETY PRECAUTIONS, X-RADIATION PRECAUTIONS, HIGH VOLTAGE HOLD-DOWN TEST, and PRODUCT SAFETY NOTICE on Page 2.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A REPLACEMENT IS MADE IN ANY AREA OF A RECEIVER. COMPONENTS INDICATED BY A ⚠ IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATE COMPONENTS IN WHICH SAFETY CAN BE OF SPECIAL SIGNIFICANCE. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS DESIGNATED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT DESIGNATED BY A ⚠. NO DEVIATIONS FROM RESISTANCE, WATTAGE, AND VOLTAGE RATINGS MAY BE MADE FOR REPLACEMENT ITEMS DESIGNATED BY A ⚠.

Notes: Parts having Location Number are located on the following boards.
- Numbers 700 Series . . . . .On the Picture Tube Socket
- Numbers 900 Series . . . . .Out of Board.
- Numbers 1100 and 1900 Series . . . . .On the Front Board
- All Other Numbers . . . . .On the Main Board and Video Board

Note: Schematic part location numbers may not always match with the part descriptions.
The part descriptions are correct and should be used.

CAPACITORS

NOTES:
Read description of the Capacitor as follows:

(Example)
CERAMIC 100P K 50V

- 50V — Rated Voltage
- K — Tolerance Symbols:
  - less than 10PF
    - A . .Not specified
    - B . .±0.1PF   C . .±0.25PF
    - D . .±0.5PF   F . .±1PF
    - G . .±2PF   R . .+0.25 - 0PF
    - S . .+0 - 0.25PF   E . .+0 - 1PF
  - more than 10PF
    - A . .Not specified
    - B . .±0.1%   C . .±0.25%
    - D . .±0.5%   F . .±1%
    - G . .±2%   H . .±3%
    - J . .±5%   K . .±10%
    - L . .±15%   M . .±20%
    - N . .±30%   P . .+100 - 0%
    - Q . .+30 - 10%   T . .+50 - 10%
    - U . .+75 - 10%   V . .+20 - 10%
    - W .+100 - 10%   X . .+40 - 20%
    - Y . .+150 - 10%   Z . .+80 - 20%
- 100P — Rated Value: P...Pico Farad U...Micro Farad
- CERAMIC — Material:
  - CERAMIC . . . . . .Ceramic
  - MT-PAPER . . . . .Metalized Paper
  - POLYESTER . . .Polyester
  - MT-POLYEST . .Metalized Polyester
  - POLYPRO . . . . .Polypropylene
  - MT-POLYPRO . .Metalized Polypropylene
  - COMPO-FILM . .Composite Film
  - MT-COMPO . . . .Metalized Composite
  - STYRENE . . . . . .Styrene
  - TA-SOLID . . . . . .Tantalum Solid
  - AL-SOLID . . . . . .Aluminum Solid
  - ELECT . . . . .Electrolytic
  - NP-ELECT . . . . .Non-Polarized Electrolytic
  - OS-SOLID . . . . .Aluminum Solid with Organic Semiconductive Electrolytic

RESISTORS

NOTES:
Read description of the Resistor as follows:

(Example)
CARBON 4.7K J A 1/4W

- 1/4W — Rated Wattage
- A — Performance Symbols:
  - A...General B...Non-flammabl
  - Z...Low noise
  - Other... Temperature coefficie
- J — Tolerance Symbols:
  - A...0.05% B...0.1% C...25%
  - D...0.5% F...1% G...2%
  - J...5% K...10% M...20%
  - P...+5 -15%
- 4.7K — Rated Value, ohms:
  - K...1,000 M...1,000,000
- CARBON — Material:
  - CARBON .... Carbon
  - MT-FILM ....Metal Film
  - OXIDE-MT ....Oxide Metal Film
  - SOLID ....Composition
  - MT-GLAZE ....Metal Glaze
  - WIRE WOUND .....Wire Wound
  - CERAMIC RES .... Ceramic
  - FUSIBLE RES ..... Fusible

Schematic Location	Part No.	Description		

MAIN PC BOARD

CAPACITORS

Schematic Location	Part No.	Description		
C001	CEXLB1H100WAN	ELECT	10U M	50V
C002	CEXLB1H100WAN	ELECT	10U M	50V
C003	CK1H562KLZBNG	CERAMIC	5600P K	50V
C004	CK1H562KLZBNG	CERAMIC	5600P K	50V
C006	CEXLB1H4R7WAN	ELECT	4.7U M	50V
C008	CEXLB1E101WAN	ELECT	100U M	25V
C010	CEXLB1C471WAN	ELECT	470U M	16V
C011	CEXLB1C471WAN	ELECT	470U M	16V
C015	CEXLB1E102WAN	ELECT	1000U M	25V
⚠C406	CK2H471KCBBQN	CERAMIC	470P K	500V
⚠C407	CK2H222KCBBQN	CERAMIC	2200P K	500V
⚠C408	CE2C4R7M4VANN	ELECT	4.7U M	160V
⚠C411	CMXAA3Y652AKN	MT-POLYPRO	6500P H	1.5K
	CM3Y652HANA0N	MT-POLYPRO	6500P H	1.5K
⚠C412	CMXAA3Y602AKN	MT-POLYPRO	6000P H	1.5K
	CM3Y602HANA0N	MT-POLYPRO	6000P H	1.5K
⚠C413	CN2G183JBEAQN	POLYPRO	0.018U J	400V
⚠C414	CN2G183JBEAQN	POLYPRO	0.018U J	400V
⚠C416	CMXAV2D184ABS	MT-POLYPRO	0.18U M	200V
	CM2E184JAPA0N	MT-POLYPRO	0.18U J	250V
	CM2E184JAUAPN	MT-POLYPRO	0.18U J	250V
	CM2E184JAYAQN	MT-POLYPRO	0.18U J	250V
⚠C417	CMXAV2D154ABS	MT-POLYPRO	0.15U M	200V
	CM2E154JAPA0N	MT-POLYPRO	0.15U J	250V
	CM2E154JAUAPN	MT-POLYPRO	0.15U J	250V
	CM2E154JAYAQN	MT-POLYPRO	0.15U J	250V
⚠C419	CG2A225KAPANN	MT-POLYEST	2.2U K	100V
C421	CEXLB0J221WAN	ELECT	220U M	6.3V
C462	CC1H101JLZCNG	CERAMIC	100P J	50V
C463	CF1H153JADANN	POLYESTER	0.015U J	50V
	CF1H153JBFANN	POLYESTER	0.015U J	50V
C466	CEXLB1H4R7WAN	ELECT	4.7U M	50V
C482	CEXLB2A470WAN	ELECT	47U M	100V
C484	CEXLB1H4R7WAN	ELECT	4.7U M	50V
⚠C486	CK2H471KCBBQN	CERAMIC	470P K	500V
C487	CEXLB1V102WAN	ELECT	1000U M	35V
C488	CEXLB1C471WAN	ELECT	470U M	16V
C493	CPXAA2A2R2AAN	NP-ELECT	2.2U M	100V
C497	CEXLB1C221WAN	ELECT	220U M	16V
C502	CEXLB1V221WAN	ELECT	220U M	35V
C503	CE1H2R2K4UANN	ELECT	2.2U K	50V
C504	CEXLB1E222WAN	ELECT	2200U M	25V
C506	CF1H562KBFANN	POLYESTER	5600P K	50V
C511	CH1H154JAGANN	MT-COMPO	0.15U J	50V
C516	CEXLB1H4R7WAN	ELECT	4.7U M	50V
⚠C601	CGXAV27224DCN	MT-POLYEST	0.22U M	275V
⚠C602	CGXAV27224DCN	MT-POLYEST	0.22U M	275V
⚠C606	CKXAV2E471ABW	CERAMIC	470P M	250V
	CKXAV2E471BBW	CERAMIC	470P M	250V
⚠C608	CK3A222KANHNN	CERAMIC	2200P K	1K
	CK3A222KCRDNN	CERAMIC	2200P K	1K
	CK3A222KCTBNN	CERAMIC	2200P K	1K
⚠C609	CEXAV2D471DEN	ELECT	470U M	200V
	CEXAV2D471EZN	ELECT	470U M	200V
⚠C611	CK3A221KCRDNN	CERAMIC	220P K	1K
	CK3A221KCTBNN	CERAMIC	220P K	1K
C612	CF1H104KBFANN	POLYESTER	0.1U K	50V
C613	CF1H473JBFANN	POLYESTER	0.047U J	50V
C614	CF1H103JBFANN	POLYESTER	0.01U J	50V
C615	CEXLB1E470WAN	ELECT	47U M	25V
C622	CEXLB1V471WAN	ELECT	470U M	35V
C623	CEXLB1C222WAN	ELECT	2200U M	16V
⚠C625	CK3A272KCRDNN	CERAMIC	2700P K	1K
	CK3A272KCTBNN	CERAMIC	2700P K	1K
C626	CEXLB1C332WAN	ELECT	3300U M	16V
⚠C628	CEXAA2C221AJN	ELECT	220U M	160V
	CEXAV2C221ELC	ELECT	220U M	160V
	CE2C221MMVAEN	ELECT	220U M	160V
C629	CEXLB1C221WAN	ELECT	220U M	16V
C630	CEXLB1H1R0WAN	ELECT	1U M	50V
⚠C633	CKXAV2E222ABW	CERAMIC	2200P M	250V
	CKXAV2E222BBW	CERAMIC	2200P M	250V
C634	CEXLB1C470WAN	ELECT	47U M	16V
C635	CEXLB1C221WAN	ELECT	220U M	16V
C636	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C639	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C641	CEXLB1H101WAN	ELECT	100U M	50V
C642	CEXLB1H1R0WAN	ELECT	1U M	50V
C646	CEXLB1E102WAN	ELECT	1000U M	25V
C648	CK1E104ZLZFNG	CERAMIC	0.1U Z	25V
C650	CEXLB1E102WAN	ELECT	1000U M	25V
C654	CH1H105JAGANN	MT-COMPO	1U J	50V
C655	CK1E104ZLZFNG	CERAMIC	0.1U Z	25V
C658	CEXLB1A102WAN	ELECT	1000U M	10V
C659	CH1H105JAGANN	MT-COMPO	1U J	50V
C660	CEXLB1A102WAN	ELECT	1000U M	10V
C677	CEXLB1E102WAN	ELECT	1000U M	25V
C678	CEXLB1A331WAN	ELECT	330U M	10V
C688	CEXLB1C101WAN	ELECT	100U M	16V
C689	CK1H104ZLZFNG	CERAMIC	0.1U Z	50V
C693	CEXLB1HR10WAN	ELECT	0.1U M	50V
C800	CK1E104ZLZFNG	CERAMIC	0.1U Z	25V
C1102	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1103	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1220	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C1221	CEXLB1C470WAN	ELECT	47U M	16V
C1222	CC1H101JLZCNG	CERAMIC	100P J	50V
C1223	CC1H101JLZCNG	CERAMIC	100P J	50V

Schematic Location	Part No.	Description
C1224	CEXLB1C470WAN	ELECT 47U M 16V
C1225	CK1H103KLZBNG	CERAMIC 0.01U K 50V
C3401	CEXLB1HR10WAN	ELECT 0.1U M 50V
C3404	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3406	CK1H123KLZBNG	CERAMIC 0.012U K 50V
C3407	CK1H562KLZBNG	CERAMIC 5600P K 50V
C3408	CEXLB1HR47WAN	ELECT 0.47U M 50V
C3411	CEXLB1HR47WAN	ELECT 0.47U M 50V
C3412	CEXLB1C470WAN	ELECT 47U M 16V
C3413	CEXLB1E4R7WAN	ELECT 4.7U M 25V
C3414	CEXLB1C221WAN	ELECT 220U M 16V
C3416	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3417	CEXLB1E4R7WAN	ELECT 4.7U M 25V
C3418	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3421	CK1H272KLZBNG	CERAMIC 2700P K 50V
C3422	CK1H473KLZBNG	CERAMIC 0.047U K 50V
C3423	CT1A3R3KDRANG	TA-SOLID 3.3U K 10V
C3424	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3426	CT1A100KDRANG	TA-SOLID 10U K 10V
C3427	CEXLB1H1R0WAN	ELECT 1U M 50V
C3428	CEXLB1E4R7WAN	ELECT 4.7U M 25V
C3429	CEXLB1E4R7WAN	ELECT 4.7U M 25V
C3430	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3431	CK1H472KLZBNG	CERAMIC 4700P K 50V
C3432	CEXLB1HR10WAN	ELECT 0.1U M 50V
C3433	CK1H472KLZBNG	CERAMIC 4700P K 50V
C3434	CK1H223KLZBNG	CERAMIC 0.022U K 50V
C3436	CPXLB1H4R7ZAN	NP-ELECT 4.7U M 50V
C3437	CEXLB1E4R7WAN	ELECT 4.7U M 25V
C3438	CEXLB1E4R7WAN	ELECT 4.7U M 25V

DIODES

Schematic Location	Part No.	Description
D406	DDXLBB015---N	DIODE ERB44-04
D407	DDERD07-15L-N	DIODE ERD07-15L
D408	DZ1Z150-----N	ZENER DIODE 1Z150
D410	DZXLBZA5.1A-N	ZENER DIODE MTZJ5.1A
⚠D421	DZHZ11B2L---N	ZENER DIODE HZ11B2L
⚠D422	DZHZ11B2L---N	ZENER DIODE HZ11B2L
D428	DZMTZJ15A---N	ZENER DIODE MTZJ15A
	DZRD15EB1---N	ZENER DIODE RD15EB1
D429	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D461	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D481	DDXLBB013---N	DIODE ERA18-04
D482	DDXLBB013---N	DIODE ERA18-04
D483	DDXLBB013---N	DIODE ERA18-04
D486	DZMTZJ10B---N	ZENER DIODE MTZJ10B
	DZRD10EB2---N	ZENER DIODE RD10EB2

Schematic Location	Part No.	Description
D501	DDXLBB006---N	DIODE EM01Z(LYS)
	DDXLBB012---N	DIODE ERA15-02
D502	DZ1Z75------N	ZENER DIODE 1Z75
D503	DZXLBZA36A--N	ZENER DIODE MTZJ36A
⚠D601	DDEM2B------N	DIODE EM2B
	DDXAAED0439--	DIODE GP15G
⚠D602	DDEM2B------N	DIODE EM2B
	DDXAAED0439--	DIODE GP15G
⚠D603	DDEM2B------N	DIODE EM2B
	DDXAAED0439--	DIODE GP15G
⚠D604	DDEM2B------N	DIODE EM2B
	DDXAAED0439--	DIODE GP15G
D611	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
⚠D612	DCPC123YC2--N	PHOTO COUPLE PC123YC2
	DCTLP421-BL-N	PC TLP421(BL)
D613	DZMTZJ9.1C--N	ZENER DIODE MTZJ9.1C
	DZRD9.1EB3--N	ZENER DIODE RD9.1EB3
D614	DDERA91-02--N	DIODE ERA91-02
D615	DD1SS133----N	DIODE 1SS133
D621	DDXLBB018---N	DIODE EU2
D622	DDXAAED0434--	DIODE 1N4148
	DD1SS133----N	DIODE 1SS133
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D624	DDXLBB024---N	DIODE RU4YX LF-L1
⚠D625	DDFE201-6L43N	DIODE FE201-6L43
D626	DDXLBB024---N	DIODE RU4YX LF-L1
D627	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D638	DZXLBZA36A--N	ZENER DIODE MTZJ36A
D641	DDXLBB019---N	DIODE EU2Z
D642	DDXAAED0434--	DIODE 1N4148
	DD1SS133----N	DIODE 1SS133
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D643	DDXAAED0434--	DIODE 1N4148
	DD1SS133----N	DIODE 1SS133
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D654	DD1SS133----N	DIODE 1SS133
D655	DDXAAED0434--	DIODE 1N4148
	DD1SS133----N	DIODE 1SS133
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D656	DDRB201A60--N	DIODE RB201A60
D659	DZUDZS3.0B--G	ZD UDZS3.0B-TE-17
	DZUDZ3.0B---G	ZENER DIODE UDZ3.0B TE-17
	DZ02DZ3.0Z--G	ZENER DIODE 02DZ3.0Z(TPH3
D672	DDRB201A60--N	DIODE RB201A60

Schematic Location	Part No.	Description
D680	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D683	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D687	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D693	DZMTZJ6.2A--N	ZENER DIODE MTZJ6.2A
	DZRD6.2EB1--N	ZENER DIODE RD6.2EB1
D694	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
D801	DDXAAED0434--	DIODE 1N4148
	DD1S2076A---N	DIODE 1S2076A
	DD1S2473----N	DIODE 1S2473
	INTEGRATED CIRCUITS	
IC002	QLA42052-E--N	IC LA42052-E
IC490	QBA178M05T--N	IC BA178M05T
⚠IC501P	QLA7849-----N	IC LA7849-E
⚠IC601	QSE130NH----N	IC SE130NH
IC652	QBA33BC0T---N	IC BA33BC0T
IC653	QLA5774-E---N	IC QLA5774-E---M
IC681	QPQ050ES1MXPN	IC PQ050ES1MXP
IC803	QLA79200----N	IC LA79200
IC1201	QCD4053BE---N	IC CD4053BE
IC3401	QCXA2234Q---P	IC CXA2234Q-T6
	COILS	
⚠LF601	1AV4F35B0290N	LINE FILTER
	1AV4F35B0700N	LINE FILTER
L401	1AV4L26B4410N	INDUCTOR, 3.3U, FILTER
L402	1LB4Z21B0100N	CORE, PIPE
L403	1LB4Z21B0060N	CORE, PIPE
⚠L413	1AV4L71B0650N	COIL, LINEARITY
⚠L414	LM0045	INDUCTOR 202J
	LM0045D	INDUCTOR
	1AV4L26B0170N	INDUCTOR, 2200U K
	1AV4L26B0260N	INDUCTOR, 2000U
⚠L416	1AV4L26B0770N	INDUCTOR, 420UH
	1AV4L26B0560N	INDUCTOR, 420UH
L602	1AV4Z21B0140B	CORE, PIPE
L611	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L612	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L621	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE

Schematic Location	Part No.	Description
L623	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L624	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L625	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L628	ZZ0122	PIPE CORE
	1LB4Z21B0080N	CORE, PIPE
L653	1AV4L2MA330KN	INDUCTOR, 33U M
	1AV4L2WK330MN	INDUCTOR, 33U M
⚠L901	1AV0L81B03500	ASSY, COIL, DEGAUSSING
	TRANSISTORS	
Q001	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q401	T2SC2271-D--N	TR 2SC2271-D
	T2SC2271-D-CN	TR 2SC2271-D-CTV
	T2SC2271-E--N	TR 2SC2271-E
	T2SC2271-E-CN	TR 2SC2271-E-CTV
⚠Q402	T2SD2634-YB-N	TR 2SD2634-YB
Q486	T2SD400-E-MPN	TR 2SD400-E-MP
	T2SD400-F-MPN	TR 2SD400-F-MP
⚠Q601	T2SK2638-F82N	TR 2SK2638
Q611	T2SC2274-E--N	TR 2SC2274-E
	T2SC2274-F--N	TR 2SC2274-F
Q612	T2SA984-E---N	TR 2SA984-E
	T2SA984-F---N	TR 2SA984-F
Q613	T2SC2274-E--N	TR 2SC2274-E
	T2SC2274-F--N	TR 2SC2274-F
Q614	T2SA1015YSANN	TR 2SA1015-Y(SAN)
Q615	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA

Schematic Location	Part No.	Description
Q627	T2SA1707-S--N	TR 2SA1707-S
	T2SA1707-T--N	TR 2SA1707-T
	T2SB985-S---N	TR 2SB985-S
	T2SB985-T---N	TR 2SB985-T
Q634	T2SA1707-S--N	TR 2SA1707-S
	T2SA1707-T--N	TR 2SA1707-T
	T2SB985-S---N	TR 2SB985-S
	T2SB985-T---N	TR 2SB985-T
Q635	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q636	T2SA1707-S--N	TR 2SA1707-S
	T2SA1707-T--N	TR 2SA1707-T
	T2SB985-S---N	TR 2SB985-S
	T2SB985-T---N	TR 2SB985-T
Q637	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q641	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q681	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q682	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q683	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q688	T2SA1015YSANN	TR 2SA1015-Y(SAN)
	T2SA608NFNPAN	TR 2SA608NF-NPA
	T2SA933S-Q--N	TR 2SA933S-Q
	T2SA933S-R--N	TR 2SA933S-R
Q693	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O--N	TR 2SC1815-O
	T2SC1815-Y--N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA
	T2SC536NGNPAN	TR 2SC536NG-NPA
	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
Q695	T2SA1015YSANN	TR 2SA1015-Y(SAN)
	T2SA608-FCNPN	TR 2SA608-F-CTV-NP
Q696	T2SA1015YSANN	TR 2SA1015-Y(SAN)
	T2SA608-FCNPN	TR 2SA608-F-CTV-NP
Q1231	T2SC1740S-Q-N	TR 2SC1740S-Q
	T2SC1740S-R-N	TR 2SC1740S-R
	T2SC1740S-S-N	TR 2SC1740S-S
	T2SC1815-GR-N	TR 2SC1815-GR
	T2SC1815-O—N	TR 2SC1815-O
	T2SC1815-Y—N	TR 2SC1815-Y
	T2SC536NFNPAN	TR 2SC536NF-NPA

Schematic Location	Part No.	Description
Q1231	T2SC536NGNPAN	TR 2SC536NG-NPA
(Cont.)	T2SC945A-PA-N	TR 2SC945A-PA
	T2SC945A-QA-N	TR 2SC945A-QA
	T2SC945A-RA-N	TR 2SC945A-RA
	RESISTORS	
R001	RGF8201JTCANL	MT-GLAZE 8.2K JA 1/10W
R002	RGF8201JTCANL	MT-GLAZE 8.2K JA 1/10W
R003	RGF3301JTCANL	MT-GLAZE 3.3K JA 1/10W
R004	RGF3301JTCANL	MT-GLAZE 3.3K JA 1/10W
R006	RDB3300JPBANN	CARBON 330 JA 1/4W
R008	RDD8201JPAANN	CARBON 8.2K JA 1/6W
R013	RDD5601JPAANN	CARBON 5.6K JA 1/6W
⚠R106TM	RS21802JGDANN	OXIDE-MT 18K JA 2W
R354	RDD1002JPAANN	CARBON 10K JA 1/6W
R404	RDD3300JPAANN	CARBON 330 JA 1/6W
R406	RDA6801JPCANN	CARBON 6.8K JA 1/2W
⚠R407	RS24701JGDANN	OXIDE-MT 4.7K JA 2W
⚠R408	RS18201JGCANN	OXIDE-MT 8.2K JA 1W
⚠R413	RSXAV53R9JCAL	OXIDE-MT 3.9 JB 5W
R416	RDB33R0JPBANN	CARBON 33 JA 1/4W
R418	RDA2701JPCBNN	CARBON 2.7K JB 1/2W
⚠R421	RND1201FPAANN	MT-FILM 1.2K FA 1/6W
⚠R422	RND1002FPAANN	MT-FILM 10K FA 1/6W
⚠R423	RND3301FPAANN	MT-FILM 3.3K FA 1/6W
R428	RDD1502JPAANN	CARBON 15K JA 1/6W
R430	RGF1001JTCANL	MT-GLAZE 1K JA 1/10W
R461	RDD3303JPAANN	CARBON 330K JA 1/6W
R462	RDD2202JPAANN	CARBON 22K JA 1/6W
⚠R463	RS13R30JGCAEN	OXIDE-MT 3.3 JA 1W
	RS13R30JGCANN	OXIDE-MT 3.3 JA 1W
R464	RDD1802FPAANN	CARBON 18K JA 1/6W
R465	RGFR000ZTCANL	MT-GLAZE 0.000 ZA 1/10W
⚠R467	RS21201JGDAGN	OXIDE-MT 1.2K JA 2W
	RS21201JGDANN	OXIDE-MT 1.2K JA 2W
R468	RDD1502JPAANN	CARBON 15K JA 1/6W
⚠R473	RS24R70JGDANN	OXIDE-MT 4.7 JA 2W
R481	RDA1R00JPCBNN	CARBON 1 JB 1/2W
R482	RDB68R0JPBANN	CARBON 68 JA 1/4W
R483	RDA1R00JPCBNN	CARBON 1 JB 1/2W
⚠R486	RS212R0JGDANN	OXIDE-MT 12 JA 2W
R487	RDD3900JPAANN	CARBON 390 JA 1/6W
⚠R488	RS15R60JGCANN	OXIDE-MT 5.6 JA 1W
⚠R489	RS218R0JGDANN	OXIDE-MT 18 JA 2W
⚠R490	RS218R0JGDANN	OXIDE-MT 18 JA 2W
R491	RDB1001JPBANN	CARBON 1K JA 1/4W
R493	RDB4703JPBANN	CARBON 470K JA 1/4W
R494	RDB5603JPBANN	CARBON 560K JA 1/4W
⚠R495	RS218R0JGDANN	OXIDE-MT 18 JA 2W
⚠R497	RS25R60JGDAGN	OXIDE-MT 5.6 JA 2W
	RS25R60JGDANN	OXIDE-MT 5.6 JA 2W

Schematic Location	Part No.	Description
R503	RDD4701JPAANN	CARBON 4.7K JA 1/6W
R504	RND1002FPAANN	MT-FILM 10K FA 1/6W
R505	RDA1R50JPCANN	CARBON 1.5 JA 1/2W
R506	RDD8200JPAANN	CARBON 820 JA 1/6W
R507	RDA1R80JPCANN	CARBON 1.8 JA 1/2W
R508	RDD1202JPAANN	CARBON 12K JA 1/6W
R509	RDD1802JPAANN	CARBON 18K JA 1/6W
⚠R511	RS21800JGDANN	OXIDE-MT 180 JA 2W
R517	RDD1802JPAANN	CARBON 18K JA 1/6W
R518	RDD1802JPAANN	CARBON 18K JA 1/6W
⚠R601	RWXAV71R0KEAL	WIRE WOUND 1 KA 7W
	RWXLB71R0KZFL	WIRE WOUND 1.0 KA 7W
⚠R602	RCXAAA3304KUN	SOLID 3.3M KA 1/2W
	RDXLBA335KWAN	SOLID 3.3M KA 1/2W
	RXXAVA335JAAN	RESISTER 3.3M JA 1/2W
	RXXAVA335JCAN	RESISTER 3.3M JA 1/2W
R603	RDA5603JPCANN	CARBON 560K JA 1/2W
⚠R604	RS22R20JGDANN	OXIDE-MT 2.2 JA 2W
R606	RDB47R0JPBANN	CARBON 47 JA 1/4W
R607	RDB22R0JPBANN	CARBON 22 JA 1/4W
R608	RGF4703JTCANL	MT-GLAZE 470K JA 1/10W
R609	RGF2202JTCANL	MT-GLAZE 22K JA 1/10W
R611	RDD4702JPAANN	CARBON 47K JA 1/6W
⚠R612	RFXAAA10R0JFN	FUSIBLE RES 10 J- 1/2W
	RFXAVA100JFNW	FUSIBLE RES 10 J- 1/2W
⚠R613	RS2R470JGDANN	OXIDE-MT 0.47 JA 2W
R614	RDB4700JPBBNN	CARBON 470 JB 1/4W
⚠R615	RS2R470JGDANN	OXIDE-MT 0.47 JA 2W
R616	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
⚠R617	RFXAAB6800JPN	FUSIBLE RES 680 J- 1/4W
	RFXAVB681JFNN	FUSIBLE RES 680 J- 1/4W
R618	RDB1001JPBANN	CARBON 1K JA 1/4W
R619	RGF2202JTCANL	MT-GLAZE 22K JA 1/10W
R621	RGF4701JTCANL	MT-GLAZE 4.7K JA 1/10W
R622	RDD1002JPAANN	CARBON 10K JA 1/6W
R623	RDD4702JPAANN	CARBON 47K JA 1/6W
R624	RDD1802JPAANN	CARBON 18K JA 1/6W
R625	RDD2202JPAANN	CARBON 22K JA 1/6W
R627	RDD1002JPAANN	CARBON 10K JA 1/6W
R628	RDB1201JPBANN	CARBON 1.2K JA 1/4W
⚠R630	RS12202JGCANN	OXIDE-MT 22K JA 1W
R631	RDB6801JPBANN	CARBON 6.8K JA 1/4W
R632	RGF1001JTCANL	MT-GLAZE 1K JA 1/10W
R633	RGF4702JTCANL	MT-GLAZE 47K JA 1/10W
R634	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R635	RDD1002JPAANN	CARBON 10K JA 1/6W
R636	RDB1201JPBANN	CARBON 1.2K JA 1/4W
R641	RDD1002JPAANN	CARBON 10K JA 1/6W
R642	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R643	RGF2203JTCANL	MT-GLAZE 220K JA 1/10W
R644	RDD1003JPAANN	CARBON 100K JA 1/6W
R645	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W

Schematic Location	Part No.	Description
R646	RDD1002JPAANN	CARBON 10K JA 1/6W
R647	RDD1002JPAANN	CARBON 10K JA 1/6W
R648	RDD5601JPAANN	CARBON 5.6K JA 1/6W
R650	RGF6800JTCANL	MT-GLAZE 680 JA 1/10W
R653	RGF1801JTCANL	MT-GLAZE 1.8K JA 1/10W
R654	RGF2200JTCANL	MT-GLAZE 220 JA 1/10W
⚠R665	RS239R0JGDANN	OXIDE-MT 39 JA 2W
R667	RDA47R0JPCANN	CARBON 47 JA 1/2W
R668	RDD1002JPAANN	CARBON 10K JA 1/6W
R669	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R683	RDD5601JPAANN	CARBON 5.6K JA 1/6W
R684	RDD5601JPAANN	CARBON 5.6K JA 1/6W
R687	RGF3302JTCANL	MT-GLAZE 33K JA 1/10W
R688	RGF6801JTCANL	MT-GLAZE 6.8K JA 1/10W
R691	RDD1002JPAANN	CARBON 10K JA 1/6W
R692	RDD6802JPAANN	CARBON 68K JA 1/6W
R693	RDD5603JPAANN	CARBON 560K JA 1/6W
R694	RDD1002JPAANN	CARBON 10K JA 1/6W
R695	RDD2202JPAANN	CARBON 22K JA 1/6W
R881	RDD1000JPAANN	CARBON 100 JA 1/6W
R882	RDD1000JPAANN	CARBON 100 JA 1/6W
R883	RDD1000JPAANN	CARBON 100 JA 1/6W
R884	RDD1000JPAANN	CARBON 100 JA 1/6W
R885	RDD2701JPAANN	CARBON 2.7K JA 1/6W
R1101	RGF1000JTCANL	MT-GLAZE 100 JA 1/10W
R1102	RGF3303JTCANL	MT-GLAZE 330K JA 1/10W
R1103	RGF1000JTCANL	MT-GLAZE 100 JA 1/10W
R1104	RGF3303JTCANL	MT-GLAZE 330K JA 1/10W
R1222	RGF1001JTCANL	MT-GLAZE 1K JA 1/10W
R1224	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R1225	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R1226	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R1227	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R1228	RDD1000JPAANN	CARBON 100 JA 1/6W
R1229	RDD1000JPAANN	CARBON 100 JA 1/6W
R1231	RDD3902JPAANN	CARBON 39K JA 1/6W
R1232	RDD1002JPAANN	CARBON 10K JA 1/6W
R1233	RDD1000JPAANN	CARBON 100 JA 1/6W
R3401	RDD2200JPAANN	CARBON 220 JA 1/6W
R3402	RDD2200JPAANN	CARBON 220 JA 1/6W
R3406	RGF1003JTCANL	MT-GLAZE 100K JA 1/10W
R3407	RGF1004JTCANL	MT-GLAZE 1M JA 1/10W
R3411	RGF6802FTCANL	MT-GLAZE 68K FA 1/10W
R3414	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R3415	RGFR000ZTCANL	MT-GLAZE 0.000 ZA 1/10W
R3418	RGF1002JTCANL	MT-GLAZE 10K JA 1/10W
R3421	RGF3301JTCANL	MT-GLAZE 3.3K JA 1/10W
R3422	RGF3001JTCANL	MT-GLAZE 3K JA 1/10W
R3426	RGF3901JTCANL	MT-GLAZE 3.9K JA 1/10W
R3434	RGF5600JTCANL	MT-GLAZE 560 JA 1/10W
R3435	RGF1003JTCANL	MT-GLAZE 100K JA 1/10W
R3436	RGF5600JTCANL	MT-GLAZE 560 JA 1/10W
R3437	RGF1003JTCANL	MT-GLAZE 100K JA 1/10W

TRANSFORMERS

Schematic Location	Part No.	Description
T401	1LB4L18B0090N	TRANS, DRIVE
⚠T402	1LB4L40B06200	TRANS, FLYBACK
⚠T601	1AV4L51B6750N	TRANS, POWER, PULSE

MISCELLANEOUS

Schematic Location	Part No.	Description
A100	1AA0B10M27900	ASSY, PWB, MAIN H3KHM-A
⚠F601	F31S6R0A1HOTL	FUSE 125V 6A
F601A	1AV4J20B0120J	HOLDER, FUSE
	1AV4J20B0171J	HOLDER, FUSE
F601B	1AV4J20B0120J	HOLDER, FUSE
	1AV4J20B0171J	HOLDER, FUSE
J1262	RDD1000JPAANN	CARBON 100 JA 1/6W
J1263	RDD1000JPAANN	CARBON 100 JA 1/6W
J1310	DZXLBZA5.1A-N	ZENER DIODE MTZJ5.1A
K1003	1AV4J12B2410N	JACK, RCA-2
	1LB4J12B04401	JACK, RCA-2(3-1)
⚠PS601	DHXAAEV0061--	THERM PTDAA1BF1R5M100
⚠RL601	1AV4S20B0170N	RELAY
	1AV4S20B0230N	RELAY
	1AV4S20B0680N	RELAY

Schematic Location	Part No.	Description

FRONT PC BOARD

CAPACITORS

Schematic Location	Part No.	Description		
C1952	CEXLB1C100WAN	ELECT	10U M	16V

DIODES

Schematic Location	Part No.	Description
D1951	DZXLBZA7.5C-N	ZENER DIODE MTZJ7.5C
D1952	DZXLBZA10B--N	ZENER DIODE MTZJ10B

COILS

Schematic Location	Part No.	Description
L1951	1AV4L2B95R6KN	INDUCTOR, 5.6U K

RESISTORS

Schematic Location	Part No.	Description		
R1951	RDD1002JPAANN	CARBON	10K JA	1/6W
R1952	RDD1001JPAANN	CARBON	1K JA	1/6W
R1953	RDD1801JPAANN	CARBON	1.8K JA	1/6W
R1954	RDD2201JPAANN	CARBON	2.2K JA	1/6W
R1955	RDD3901JPAANN	CARBON	3.9K JA	1/6W
R1956	RDD5601JPAANN	CARBON	5.6K JA	1/6W
R1957	RDD1202JPAANN	CARBON	12K JA	1/6W
R1960	RDD1001JPAANN	CARBON	1K JA	1/6W
R1961	RDD1001JPAANN	CARBON	1K JA	1/6W

SWITCHES

Schematic Location	Part No.	Description
SW1951	1AV4S10B0900J	SWITCH, PUSH 1P-1T
	1AV4S10B5650J	SWITCH, PUSH 1P-1TX1
SW1952	1AV4S10B0900J	SWITCH, PUSH 1P-1T
	1AV4S10B5650J	SWITCH, PUSH 1P-1TX1
SW1953	1AV4S10B0900J	SWITCH, PUSH 1P-1T
	1AV4S10B5650J	SWITCH, PUSH 1P-1TX1
SW1954	1AV4S10B0900J	SWITCH, PUSH 1P-1T
	1AV4S10B5650J	SWITCH, PUSH 1P-1TX1
SW1955	1AV4S10B0900J	SWITCH, PUSH 1P-1T
	1AV4S10B5650J	SWITCH, PUSH 1P-1TX1

MISCELLANEOUS

Schematic Location	Part No.	Description
A1950	1AA0B10M27940	ASSY, PWB, FRONT H3DEM
A1951	1AV4U20B40500	UNIT, REMOCON RECEIVER
	1AV4U20B98500	UNIT, REMOCON RECEIVER
K1151	1AV4J12B3300N	JACK, RCA-3

Schematic Location	Part No.	Description

VIDEO PC BOARD

CAPACITORS

Schematic Location	Part No.	Description		
C101	CEXLB0J221WAN	ELECT	220U M	6.3V
C103	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C106	CEXLB1H3R3WAN	ELECT	3.3U M	50V
C129	CC1H331JLZCNG	CERAMIC	330P J	50V
C131	CC1H100JLZCNG	CERAMIC	10P J	50V
C132	CK1H223KLZBNG	CERAMIC	0.022U K	50V
C133	RGFR000ZTCANL	MT-GLAZE	0.000 ZA	1/10W
C134	CEXLB1H1R0WAN	ELECT	1U M	50V
C136	CC1H151JLZCNG	CERAMIC	150P J	50V
C137	CK1H102KLZBNG	CERAMIC	1000P K	50V
C138	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C141	CK1H473KLZBNG	CERAMIC	0.047U K	50V
C142	CK1E104KLZBNG	CERAMIC	0.1U K	25V
C143	CEXLB1C470WAN	ELECT	47U M	16V
C144	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C147	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C148	CEXLB1C101WAN	ELECT	100U M	16V
C201	CEXLB1C101WAN	ELECT	100U M	16V
C202	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C203	CEXLB1C100WAN	ELECT	10U M	16V
C204	CEXLB1H3R3WAN	ELECT	3.3U M	50V
C206	CEXLB1C221WAN	ELECT	220U M	16V
C207	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C208	RGFR000ZTCANL	MT-GLAZE	0.000 ZA	1/10W
C209	CK1H473KLZBNG	CERAMIC	0.047U K	50V
C211	CEXLB1HR47WAN	ELECT	0.47U M	50V
C212	CEXLB1H1R0WAN	ELECT	1U M	50V
C213	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C214	CEXLB1H2R2WAN	ELECT	2.2U M	50V
C215	CEXLB1H2R2WAN	ELECT	2.2U M	50V
C216	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C218	CEXLB1C470WAN	ELECT	47U M	16V
C401	CEXLB1A331WAN	ELECT	330U M	10V
C402	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C403	CPXLB1H1R0ZAN	NP-ELECT	1U M	50V
C404	CK1H682KLZBNG	CERAMIC	6800P K	50V
C427	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C518	CH1H474JAGAJN	MT-COMPO	0.47U J	50V
C801	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C802	CEXLB1C470WAN	ELECT	47U M	16V
C806	CEXLB1C470WAN	ELECT	47U M	16V
C809	CC1H101JLZCNG	CERAMIC	100P J	50V
C810	CC1H101JLZCNG	CERAMIC	100P J	50V
C811	CEXLB1H1R0WAN	ELECT	1U M	50V
C829	CEXLB1H1R0WAN	ELECT	1U M	50V
C862	CC1H180JLZCNG	CERAMIC	18P J	50V
C863	CC1H180JLZCNG	CERAMIC	18P J	50V
C864	CK1H103KLZBNG	CERAMIC	0.01U K	50V

Schematic Location	Part No.	Description		
C866	CEXLB0J221WAN	ELECT	220U M	6.3V
C868	CK1H333KLZBNG	CERAMIC	0.033U K	50V
C869	CEXLB1H2R2WAN	ELECT	2.2U M	50V
C1001	CEXLB1H1R0WAN	ELECT	1U M	50V
C1002	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1003	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1004	CEXLB1H2R2WAN	ELECT	2.2U M	50V
C1006	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1007	CEXLB1E4R7WAN	ELECT	4.7U M	25V
C1021	CEXLB1C470WAN	ELECT	47U M	16V
C1022	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C1023	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C1024	CEXLB1H1R0WAN	ELECT	1U M	50V
C1051	CEXLB1C220WAN	ELECT	22U M	16V
C1052	CK1H103KLZBNG	CERAMIC	0.01U K	50V
C1059	CEXLB1C100WAN	ELECT	10U M	16V
	DIODES			
D351	DZXLBZA5.1A-N	ZENER DIODE MTZJ5.1A		
D487	DDXLBB012---N	DIODE ERA15-02		
	DDXLBB006---N	DIODE EM01Z(LYS)		
D831	DZUDZS3.6B--G	ZD UDZS-TE-173.6B		
D834	DZXLBZA11A--N	ZENER DIODE MTZJ11A		
D436	DDXLBB012---N	DIODE ERA15-02		
	DDXLBB006---N	DIODE EM01Z(LYS)		
D843	DDXAAED0434--	DIODE 1N4148		
	DD1S2076A----N	DIODE 1S2076A		
	DD1S2473----N	DIODE 1S2473		
D871	DZUDZS10B---G	ZENER DIODE UDZS10B TE-17		
D1051	DZXLBZA10B--N	ZENER DIODE MTZJ10B		
D1052	DZXLBZA10B--N	ZENER DIODE MTZJ10B		
D1059	DZUDZS10B---G	ZENER DIODE UDZS10B TE-17		
	INTEGRATED CIRCUITS			
⚠IC801	QXXAVC654---N	IC LA76952AH		
IC802	QCAT24WC04L-N	IC CAT24WC04L		
IC1001	QCD4053BE---N	IC CD4053BE		
	COILS			
L143	1AV4L2B9100KN	INDUCTOR, 10U K		
L801	1AV4L2B95R6KN	INDUCTOR, 5.6U K		

Schematic Location	Part No.	Description		
	TRANSISTORS			
Q131	T2SC2412K-R-P	TR 2SC2412K-T-96-R		
	T2SC2412K-S-P	TR 2SC2412K-T-96-S		
	T2SC2812-L6-P	TR 2SC2812-L6-TB		
	T2SC2812-L7-P	TR 2SC2812-L7-TB		
	T2SC2812N-L6P	TR 2SC2812N-L6-TB		
	T2SC2812N-L7P	TR 2SC2812N-L7-TB		
	T2SC3928A1R-P	TR 2SC3928A1R		
	T2SC3928A1S-P	TR 2SC3928A1S		
Q132	T2SA1037AK-RP	TR 2SA1037AK T146 R		
	T2SA1037AK-SP	TR 2SA1037AK T146 S		
	T2SA1037K-R-P	TR 2SA1037K-T-96-R		
	T2SA1037K-S-P	TR 2SA1037K-T-96-S		
	T2SA1179-M6-P	TR 2SA1179-M6		
	T2SA1179-M7-P	TR 2SA1179-M7-TB		
	T2SA1179N-M6P	TR 2SA1179N-M6-TB		
	T2SA1179N-M7P	TR 2SA1179N-M7-TB		
	T2SA1235A1E-P	TR 2SA1235A1E		
	T2SA1235A1F-P	TR 2SA1235A1F		
Q831	T2SA1037AK-RP	TR 2SA1037AK T146 R		
	T2SA1037AK-SP	TR 2SA1037AK T146 S		
	T2SA1037K-R-P	TR 2SA1037K-T-96-R		
	T2SA1037K-S-P	TR 2SA1037K-T-96-S		
	T2SA1179-M6-P	TR 2SA1179-M6		
	T2SA1179-M7-P	TR 2SA1179-M7-TB		
	T2SA1179N-M6P	TR 2SA1179N-M6-TB		
	T2SA1179N-M7P	TR 2SA1179N-M7-TB		
	T2SA1235A1E-P	TR 2SA1235A1E		
	T2SA1235A1F-P	TR 2SA1235A1F		
	RESISTORS			
R128	RDD8203JPAANN	CARBON	820K JA	1/6W
R129	RGF2200JTCANL	MT-GLAZE	220 JA	1/10W
R131	RGF3302JTCANL	MT-GLAZE	33K JA	1/10W
R132	RGF1000JTCANL	MT-GLAZE	100 JA	1/10W
R133	RDD1001JPAANN	CARBON	1K JA	1/6W
R134	RGF3301JTCANL	MT-GLAZE	3.3K JA	1/10W
R135	RGF75R0JTCANL	MT-GLAZE	75 JA	1/10W
R136	RGF1501JTCANL	MT-GLAZE	1.5K JA	1/10W
R137	RGF4702JTCANL	MT-GLAZE	47K JA	1/10W
R138	RGF4702JTCANL	MT-GLAZE	47K JA	1/10W
R139	RGF4700JTCANL	MT-GLAZE	470 JA	1/10W
R141	RGF6800JTCANL	MT-GLAZE	680 JA	1/10W
R142	RGF3302JTCANL	MT-GLAZE	33K JA	1/10W
R143	RGF1001JTCANL	MT-GLAZE	1K JA	1/10W
R144	RGFR000ZTCANL	MT-GLAZE	0.000 ZA	1/10W
R201	RGF5601JTCANL	MT-GLAZE	5.6K JA	1/10W
R202	RGF1002JTCANL	MT-GLAZE	10K JA	1/10W
R203	RGF6801JTCANL	MT-GLAZE	6.8K JA	1/10W
R204	RGF56R0JTCANL	MT-GLAZE	56 JA	1/10W
R205	RGFR000ZTCANL	MT-GLAZE	0.000 ZA	1/10W

Schematic Location	Part No.	Description	
R206	RGF2202JTCANL	MT-GLAZE	22K JA 1/10W
R207	RGF2202JTCANL	MT-GLAZE	22K JA 1/10W
R208	RGF6800JTCANL	MT-GLAZE	680 JA 1/10W
R209	RGF6803JTCANL	MT-GLAZE	680K JA 1/10W
R210	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R276	RDD1202JPAANN	CARBON	12K JA 1/6W
R281	RGF1002JTCANL	MT-GLAZE	10K JA 1/10W
R287	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R288	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R289	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R411	RND4701FPAANN	MT-FILM	4.7K FA 1/6W
R412	RDA2200JPCANN	CARBON	220 JA 1/2W
R414	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R415	RGF5601JTCANL	MT-GLAZE	5.6K JA 1/10W
R426	RDD6800JPAANN	CARBON	680 JA 1/6W
R485	RDD1802JPAANN	CARBON	18K JA 1/6W
R492	RND3302FPAANN	MT-FILM	33K FA 1/6W
R804	RDD1002JPAANN	CARBON	10K JA 1/6W
R806	RGF4701JTCANL	MT-GLAZE	4.7K JA 1/10W
R807	RGF1002JTCANL	MT-GLAZE	10K JA 1/10W
R808	RGF1002JTCANL	MT-GLAZE	10K JA 1/10W
R809	RGF4701JTCANL	MT-GLAZE	4.7K JA 1/10W
R810	RDD1002JPAANN	CARBON	10K JA 1/6W
R813	RGF1002JTCANL	MT-GLAZE	10K JA 1/10W
R814	RGF1002JTCANL	MT-GLAZE	10K JA 1/10W
R816	RGF3300JTCANL	MT-GLAZE	330 JA 1/10W
R831	RGF1003JTCANL	MT-GLAZE	100K JA 1/10W
R833	RDD1002JPAANN	CARBON	10K JA 1/6W
R856	RDD1000JPAANN	CARBON	100 JA 1/6W
R857	RDD1000JPAANN	CARBON	100 JA 1/6W
R861	RDD3902JPAANN	CARBON	39K JA 1/6W
R862	RGF2703JTCANL	MT-GLAZE	270K JA 1/10W
R863	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R864	RGF1203JTCANL	MT-GLAZE	120K JA 1/10W
R866	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R867	RGF1004JTCANL	MT-GLAZE	1M JA 1/10W
R871	RDD3301JPAANN	CARBON	3.3K JA 1/6W
R872	RDD1000JPAANN	CARBON	100 JA 1/6W
R874	RDD1000JPAANN	CARBON	100 JA 1/6W
R877	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R879	RDD1002JPAANN	CARBON	10K JA 1/6W
R1001	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R1002	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1003	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R1004	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1006	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R1007	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1008	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1009	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R1011	RGF3303JTCANL	MT-GLAZE	330K JA 1/10W
R1012	RGF1000JTCANL	MT-GLAZE	100 JA 1/10W
R1013	RGF3303JTCANL	MT-GLAZE	330K JA 1/10W
R1021	RGF2202JTCANL	MT-GLAZE	22K JA 1/10W
R1022	RGF1502JTCANL	MT-GLAZE	15K JA 1/10W
R1023	RGF2202JTCANL	MT-GLAZE	22K JA 1/10W
R1024	RGF1502JTCANL	MT-GLAZE	15K JA 1/10W
R1026	RGF2202JTCANL	MT-GLAZE	22K JA 1/10W
R1027	RGF1502JTCANL	MT-GLAZE	15K JA 1/10W
R1028	RDD1000JPAANN	CARBON	100 JA 1/6W
R1029	RDD1000JPAANN	CARBON	100 JA 1/6W
R1051	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1052	RGF75R0JTCANL	MT-GLAZE	75 JA 1/10W
R1059	RGF4700JTCANL	MT-GLAZE	470 JA 1/10W

CRYSTAL FILTERS

Schematic Location	Part No.	Description
X141	WFSTSF5235PL-	SAW F TSF5235PL
X201	EX0017GC	CRYSTAL OSCILLATOR
	1LB4V10B0020N	OSC, CRYSTAL 3.579545MH¸
X801	1AV4V10B0560N	OSC, CRYSTAL 32.768KHZ

MISCELLANEOUS

Schematic Location	Part No.	Description
⚠A101	1AV4F1BAM0321	TUNER, U/V
	1AV4F1BAM0330	TUNER, U/V
A200	1AA0B10M27920	ASSY, PWB, VIDEO H3DSA
K1001	1LB4J12B09700	JACK, RCA-6
K1051	1AV4J11B0610N	SOCKET, DIN 4P

CRT SOCKET PC BOARD

Schematic Location	Part No.	Description		
	CAPACITORS			
C701	CC1H271JLZCNG	CERAMIC	270P J	50V
C702	CK1H103ZCBFQN	CERAMIC	10000P Z	50V
C711	CC1H271JLZCNG	CERAMIC	270P J	50V
C721	CC1H271JLZCNG	CERAMIC	270P J	50V
⚠C742	CK3D102ZAHENN	CERAMIC	1000P Z	2K
	COILS			
L701	1AV4L2C1331KN	INDUCTOR, 330U K		
	TRANSISTORS			
Q701	TXXAAQT0229Z-	TR 2SC3620(LB-SAN-1)		
	T2SC2621-CRAN	TR 2SC2621-C-RA		
	T2SC2621-DRAN	TR 2SC2621-D-RA		
	T2SC2621-ERAN	TR 2SC2621-E-RA		
	T2SC2688(1)KN	TR 2SC2688(1)-K		
	T2SC2688(1)LN	TR 2SC2688(1)-L		
	T2SC2688(1)MN	TR 2SC2688(1)-M		
Q711	TXXAAQT0229Z-	TR 2SC3620(LB-SAN-1)		
	T2SC2621-CRAN	TR 2SC2621-C-RA		
	T2SC2621-DRAN	TR 2SC2621-D-RA		
	T2SC2621-ERAN	TR 2SC2621-E-RA		
	T2SC2688(1)KN	TR 2SC2688(1)-K		
	T2SC2688(1)LN	TR 2SC2688(1)-L		
	T2SC2688(1)MN	TR 2SC2688(1)-M		
Q721	TXXAAQT0229Z-	TR 2SC3620(LB-SAN-1)		
	T2SC2621-CRAN	TR 2SC2621-C-RA		
	T2SC2621-DRAN	TR 2SC2621-D-RA		
	T2SC2621-ERAN	TR 2SC2621-E-RA		
	T2SC2688(1)KN	TR 2SC2688(1)-K		
	T2SC2688(1)LN	TR 2SC2688(1)-L		
	T2SC2688(1)MN	TR 2SC2688(1)-M		
	RESISTORS			
J701	RDD56R0JPAANN	CARBON	56 JA	1/6W
R701	RDD1800JPAANN	CARBON	180 JA	1/6W
R703	RGF1201JTCANL	MT-GLAZE	1.2K JA	1/10W
R704	RDD82R0JPAANN	CARBON	82 JA	1/6W
R706	RDA2701JPCANN	CARBON	2.7K JA	1/2W
⚠R707	RS21202JGDANN	OXIDE-MT	12K JA	2W
R711	RDD1800JPAANN	CARBON	180 JA	1/6W
R713	RGF1201JTCANL	MT-GLAZE	1.2K JA	1/10W
R714	RGF82R0JTCANL	MT-GLAZE	82 JA	1/10W
R716	RDA2701JPCANN	CARBON	2.7K JA	1/2W
⚠R717	RS21202JGDANN	OXIDE-MT	12K JA	2W
R721	RDD1800JPAANN	CARBON	180 JA	1/6W
R723	RGF1201JTCANL	MT-GLAZE	1.2K JA	1/10W
R724	RDD82R0JPAANN	CARBON	82 JA	1/6W
R726	RDA2701JPCANN	CARBON	2.7K JA	1/2W
⚠R727	RS21202JGDANN	OXIDE-MT	12K JA	2W
	MISCELLANEOUS			
A700	1AA0B10M27910	ASSY, PWB, SOCKET H3DSA		
⚠K701	1AV4J11B2750N	SOCKET, CRT 8P		
	1LB4J11B0080N	SOCKET, CRT 8P		

DIGITAL PC BOARD

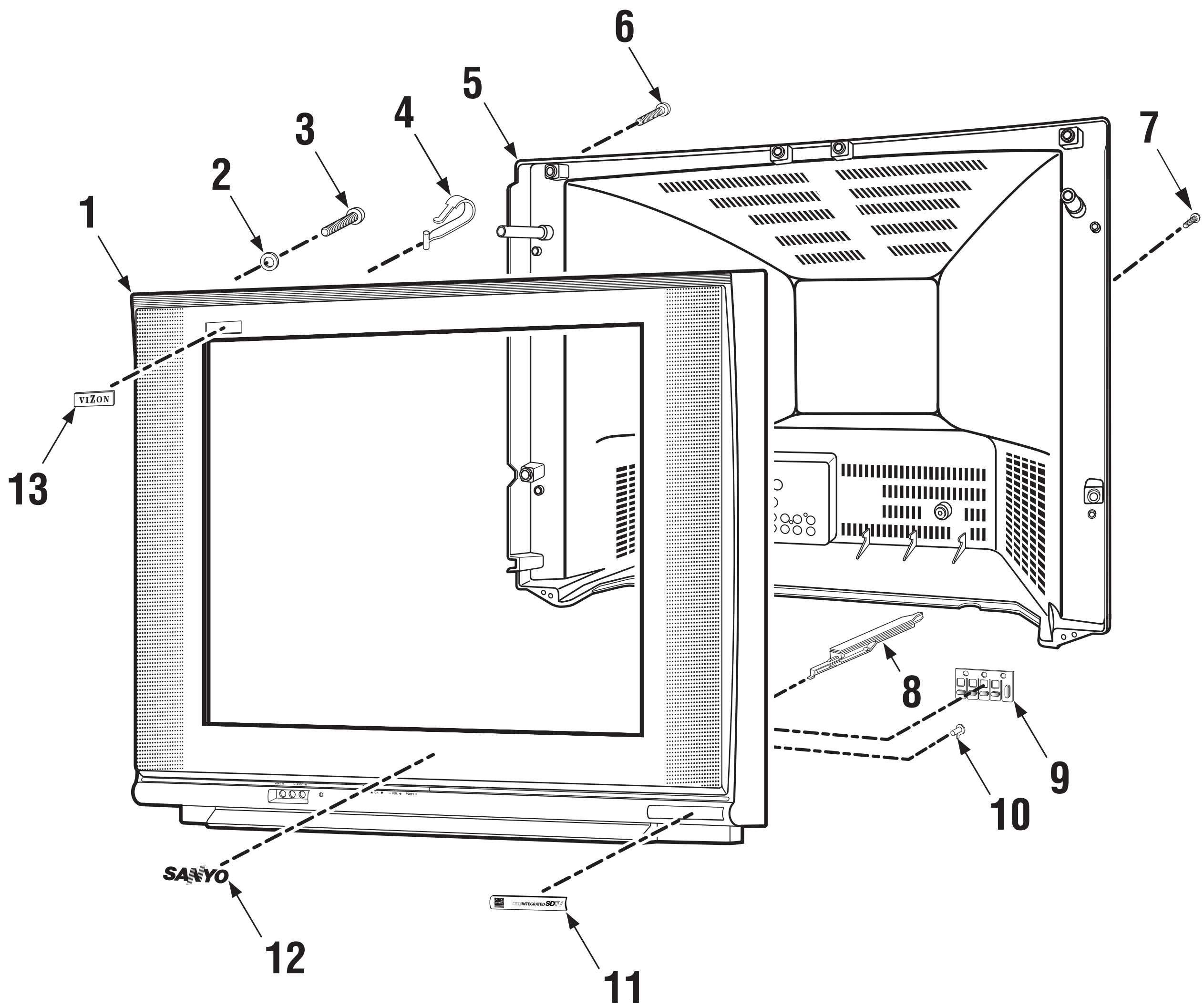
Schematic Location	Part No.	Description
A5500	1AA0B10M27930	ASSY, PWB, DIGITAL

Nonservicable part. No discreet parts provided for this pc board.

MISCELLANEOUS

Schematic Location	Part No.	Description
⚠Q901	BXXAVB447SBK-	CRT A68QFN793X001
SP901	1LB4A10B09200	SPEAKER, 8
SP902	1LB4A10B09200	SPEAKER, 8
⚠W601	1AV4W10B07405	CORD, POWER-2.15MK
	1AV4W10B14205	CORD, POWER-2.15MK
⚠W900	1AA4W30B05001	ASSY, WIRE GND CONNECTOR

CABINET PARTS LIST



CABINET PARTS LIST

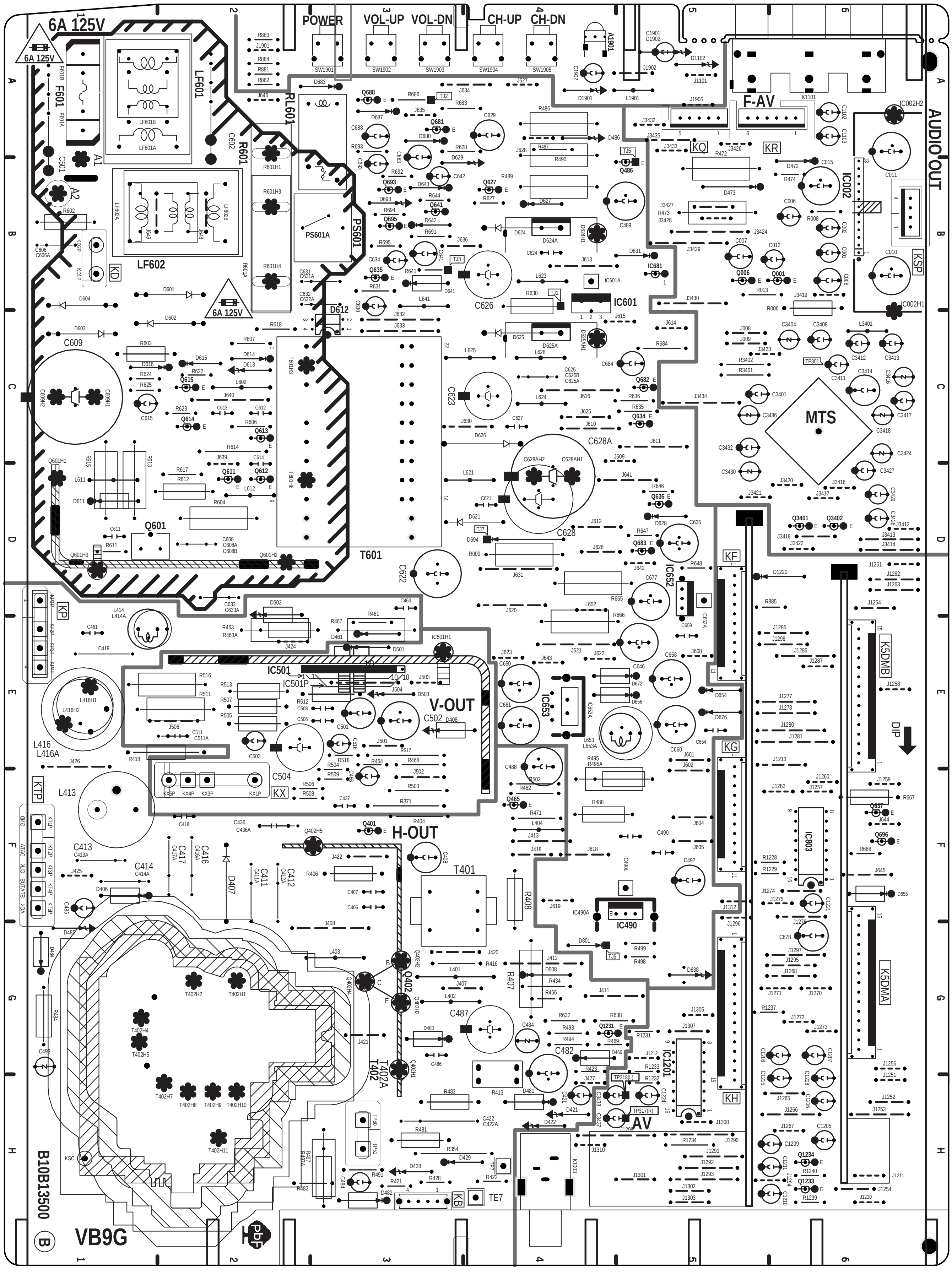
KEY NO.	PARTS NO.	DESCRIPTION
1	1AA2CAM0438BF	CABINET FRONT-H3DSA
2	SWXAA00002---	CRT MTG WASH (2.0MM 4 USED)
3	STXAA60350SAA	CRT MTG SCREW (4 USED)
4	3M04105	DC HOLDER (4 USED)
5	1AA2CBM0322E-	CABINET BACK-H3DEM
6	STXAA40140SAE	SCREW 4X14 (9 USED)
7	SFPPN30100SV-	SCREW 3X10 (3 USED)
8	1AA2CHM0035--	CHASSIS RAIL(2 USED)
9	1AA2BUM0531-F	BUTTON UNITED
10	1AA2CPM0056--	CAP RC-G8EAM
11	1AA2DES0861-H	DEC SHEET DTV
12	1AV2BAAS015AA	SANYO BADGE
13	1AA2DES0712-F	DEC SHEET VIZON

ACCESSORY PARTS LIST

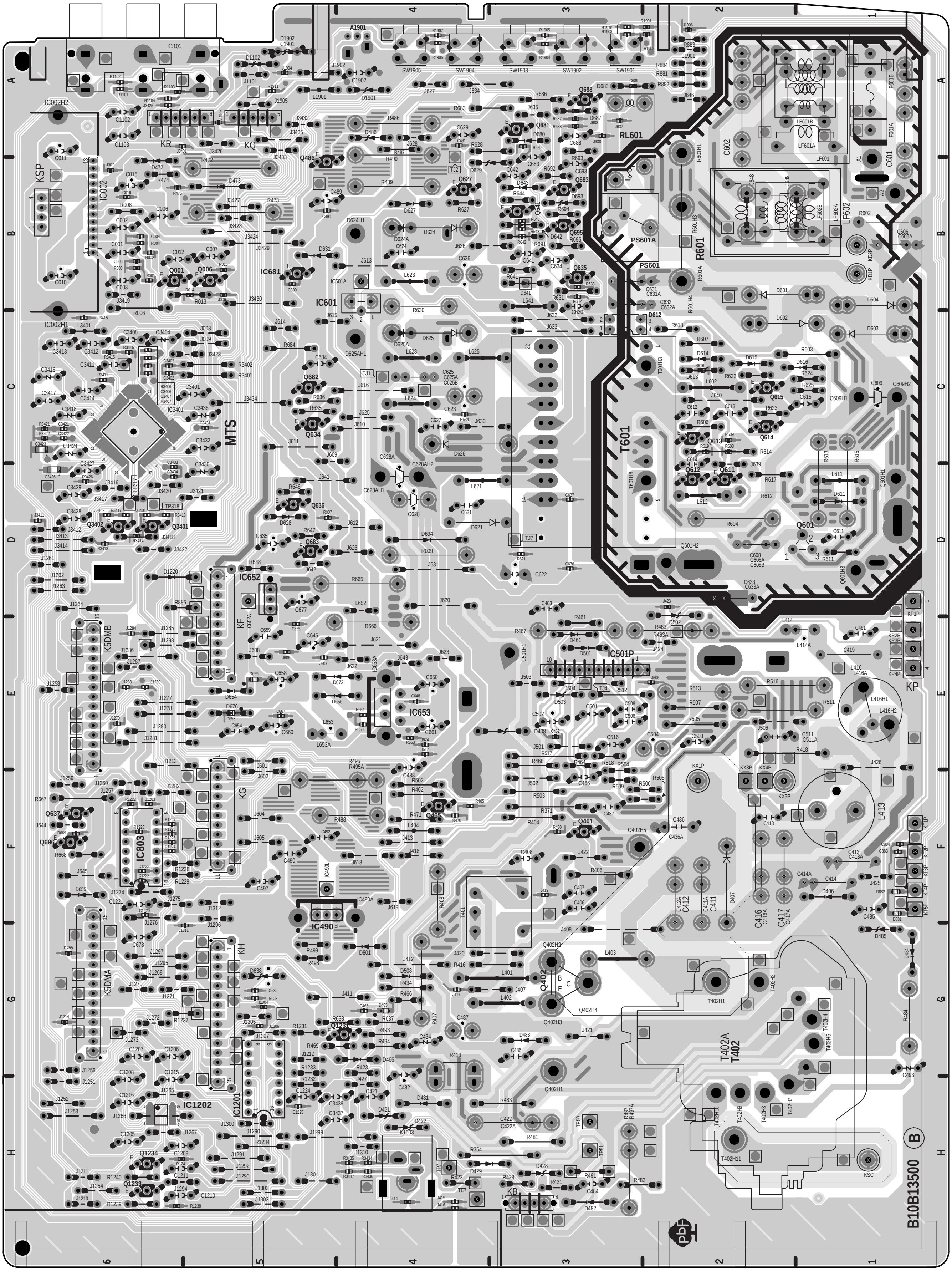
KEY NO.	PARTS NO.	DESCRIPTION
	1JC6P1P0255--	OWNER’S MANUAL (English)
	1JC6P1P0271--	OWNER’S MANUAL (Spanish)
	1JC6P1P0272--	OWNER’S MANUAL (French)
	1AV0U10B43100	ASSY, REMOCON
	1AA2RCM0295--	RC-BATTERY LID

COMPONENT AND TESTPOINT LOCATIONS

MAIN BOARD PARTS SIDE

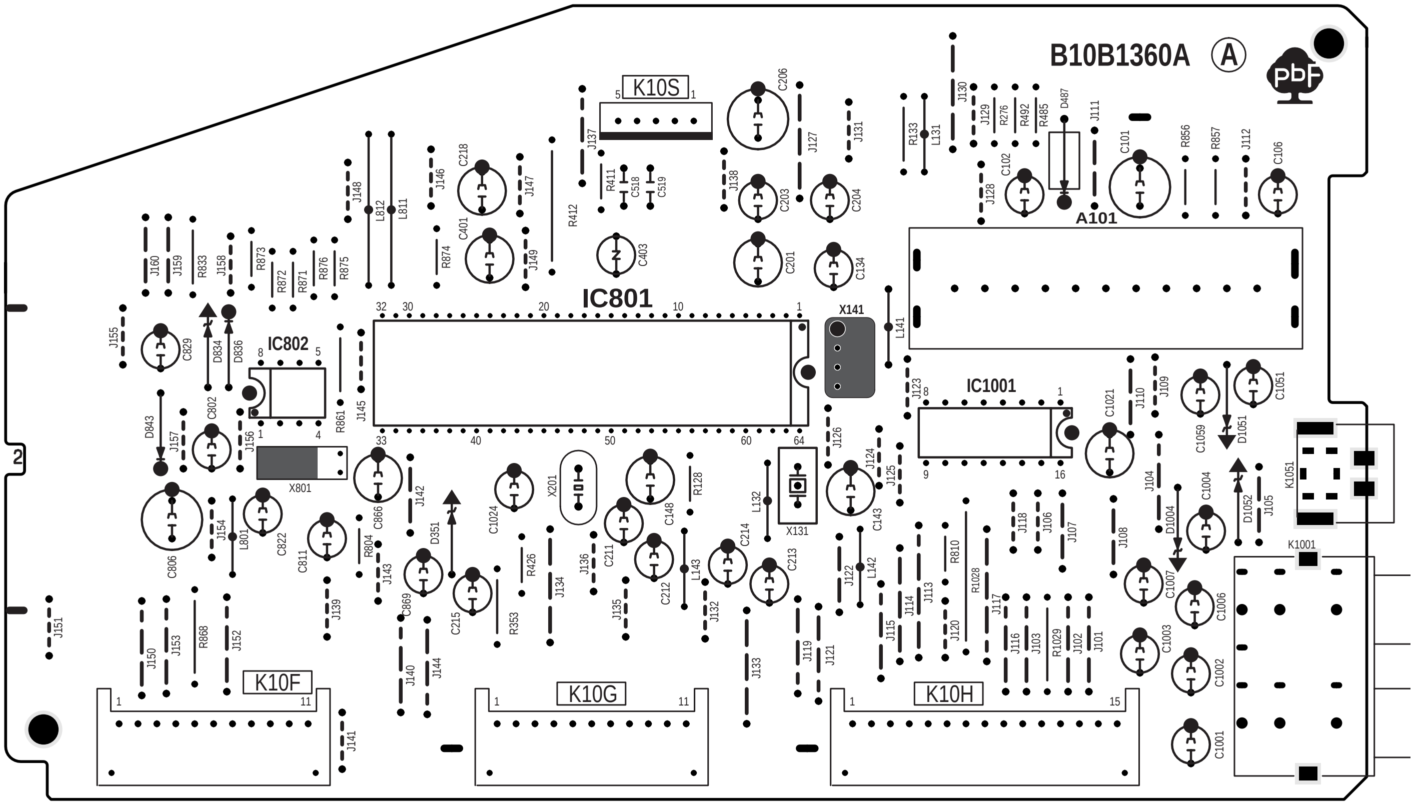


MAIN BOARD FOIL SIDE

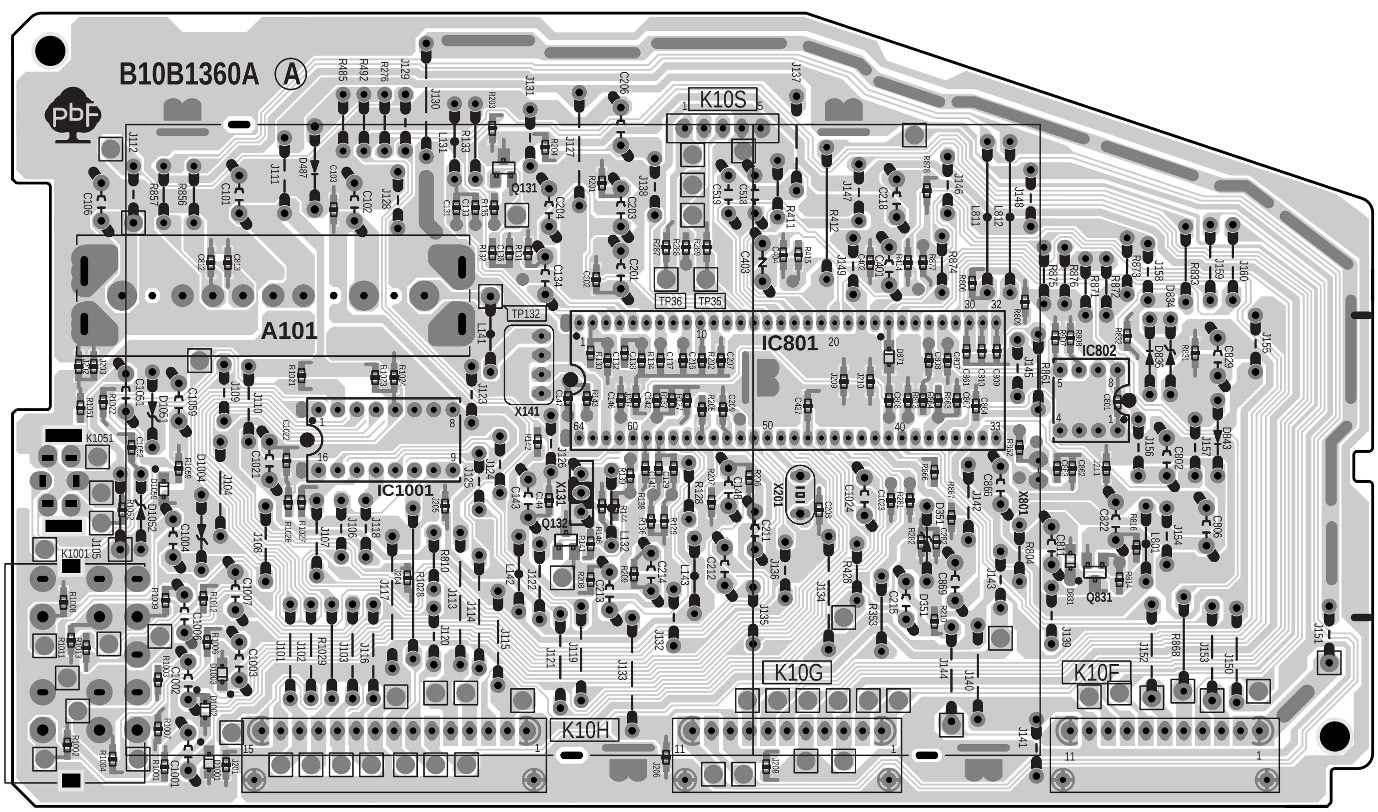


COMPONENT AND TESTPOINT LOCATIONS (Cont.)

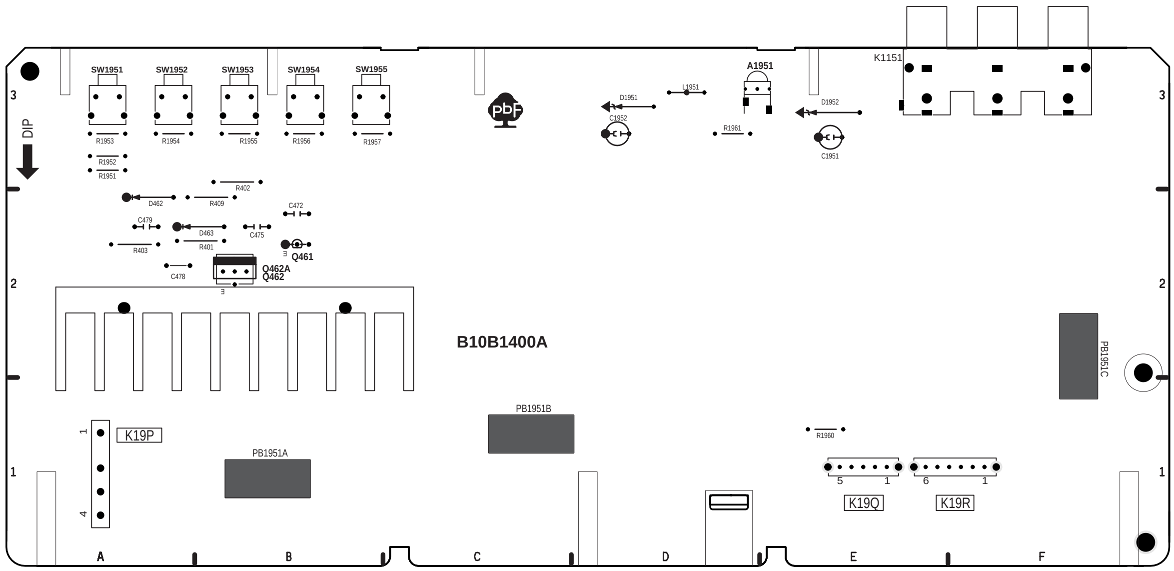
AV / VIDEO BOARD PARTS SIDE



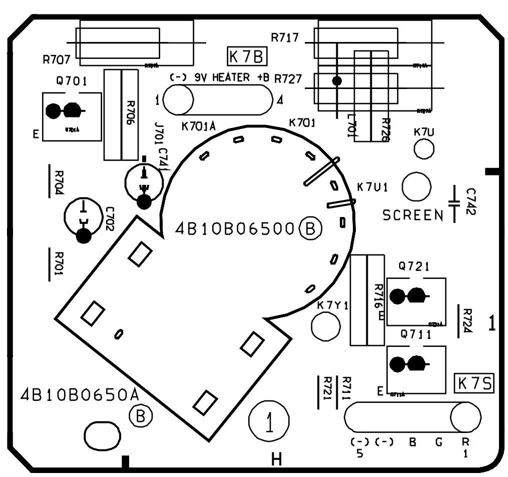
AV / VIDEO BOARD FOIL SIDE



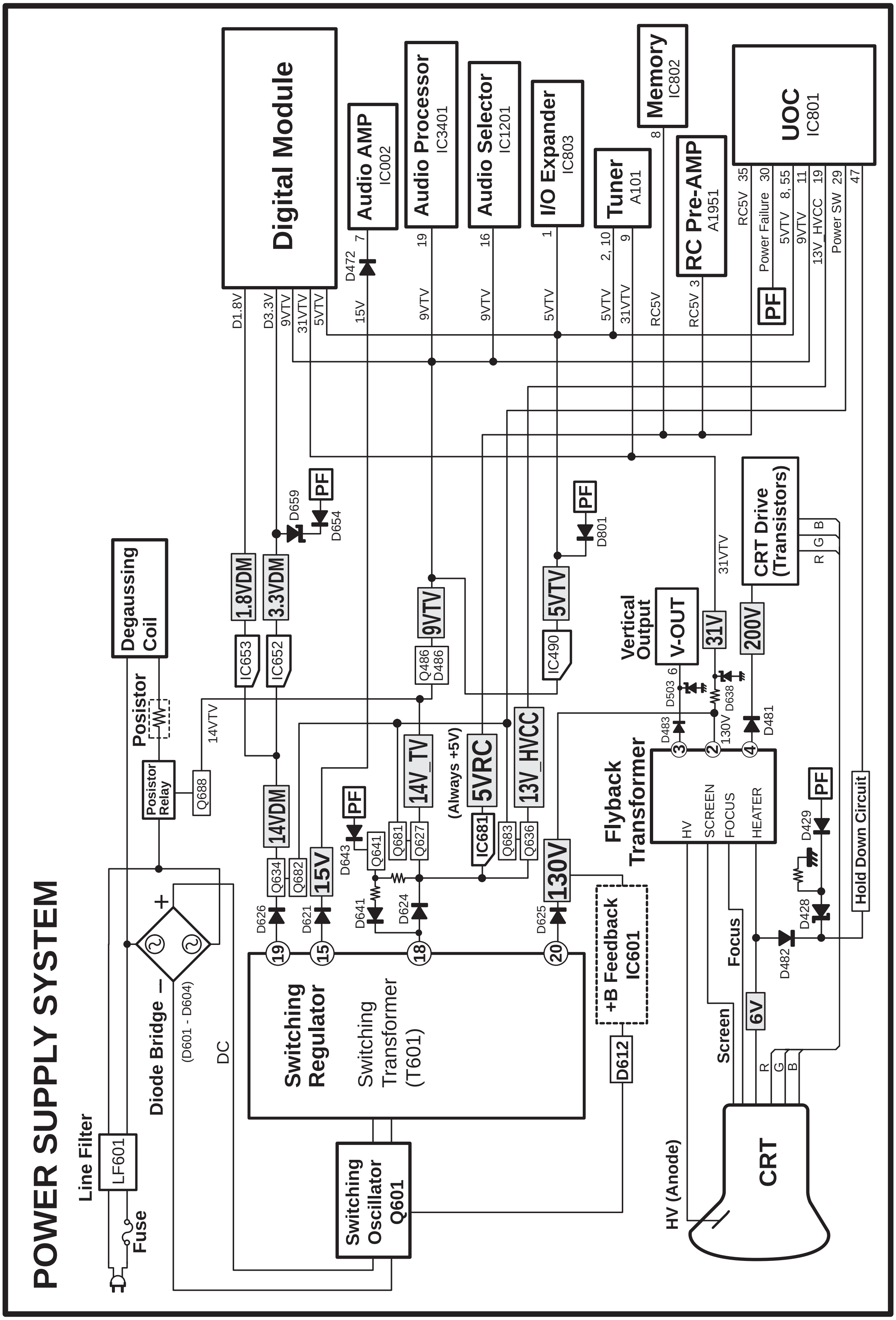
FRONT BOARD PARTS SIDE



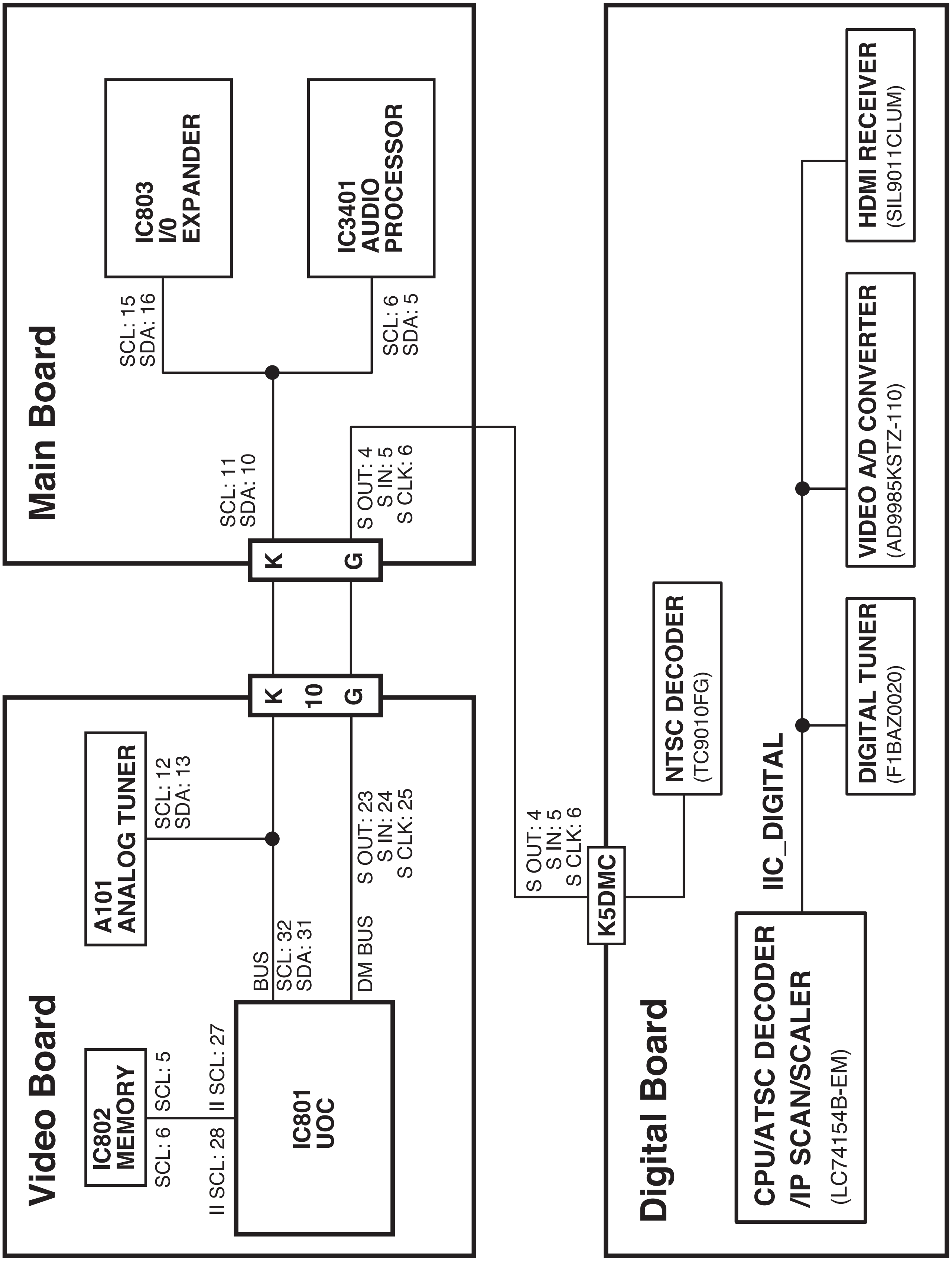
CRT SOCKET PARTS SIDE



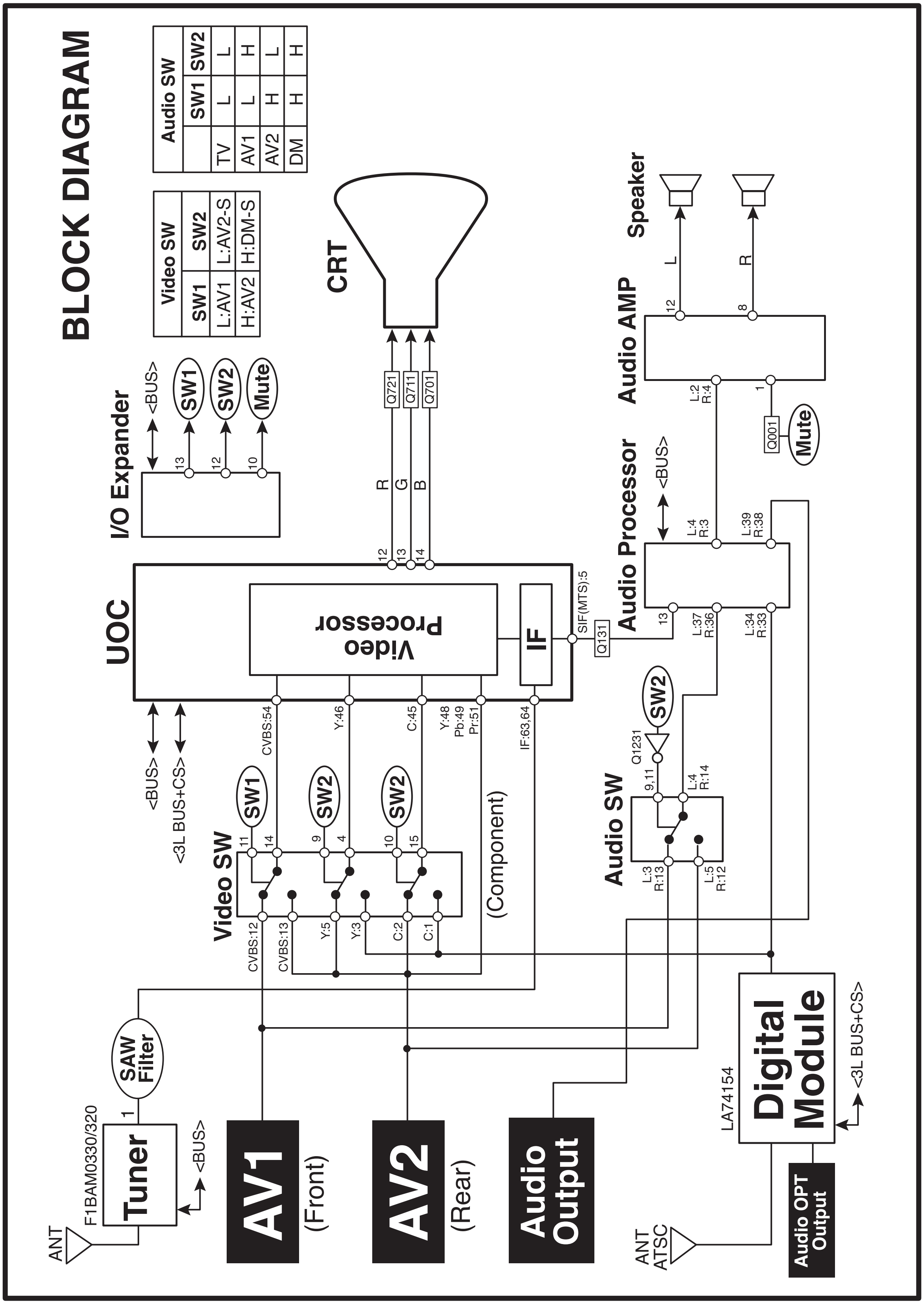
POWER LINES


POWER SUPPLY SYSTEM
Fuse
Line Filter
LF601
Diode Bridge
(D601 - D604)
DC
Posistor Relay
Q688
Posistor
14VTV
Degaussing Coil
Switching Regulator
Switching Transformer (T601)
Switching Oscillator Q601
+B Feedback IC601
D612
D626
D621
D641
D624
D625
Q634
Q682
14VDM
15V
D643
PF
Q641
Q681
Q627
14V_TV
(Always +5V)
IC681
5VRC
Q683
Q636
13V_HVCC
130V
IC653
IC652
1.8VDM
3.3VDM
D659
D654
Q486
D486
9VTV
IC490
5VTV
D801
Digital Module
D1.8V
D3.3V
9VTV
31VTV
5VTV
15V
D472
Audio AMP
IC002
Audio Processor
IC3401
Audio Selector
IC1201
I/O Expander
IC803
Tuner
A101
Memory
IC802
RC Pre-AMP
A1951
RC5V
UOC
IC801
Power Failure
HVCC
Power SW
Vertical Output
V-OUT
31V
200V
CRT Drive (Transistors)
R G B
D503
D638
D483
130V
D481
Flyback Transformer
HV
SCREEN
FOCUS
HEATER
D429
D428
D482
Hold Down Circuit
Focus
Screen
6V
HV (Anode)
CRT

MAIN CPU DATA BUS LINES



SIGNAL LINES



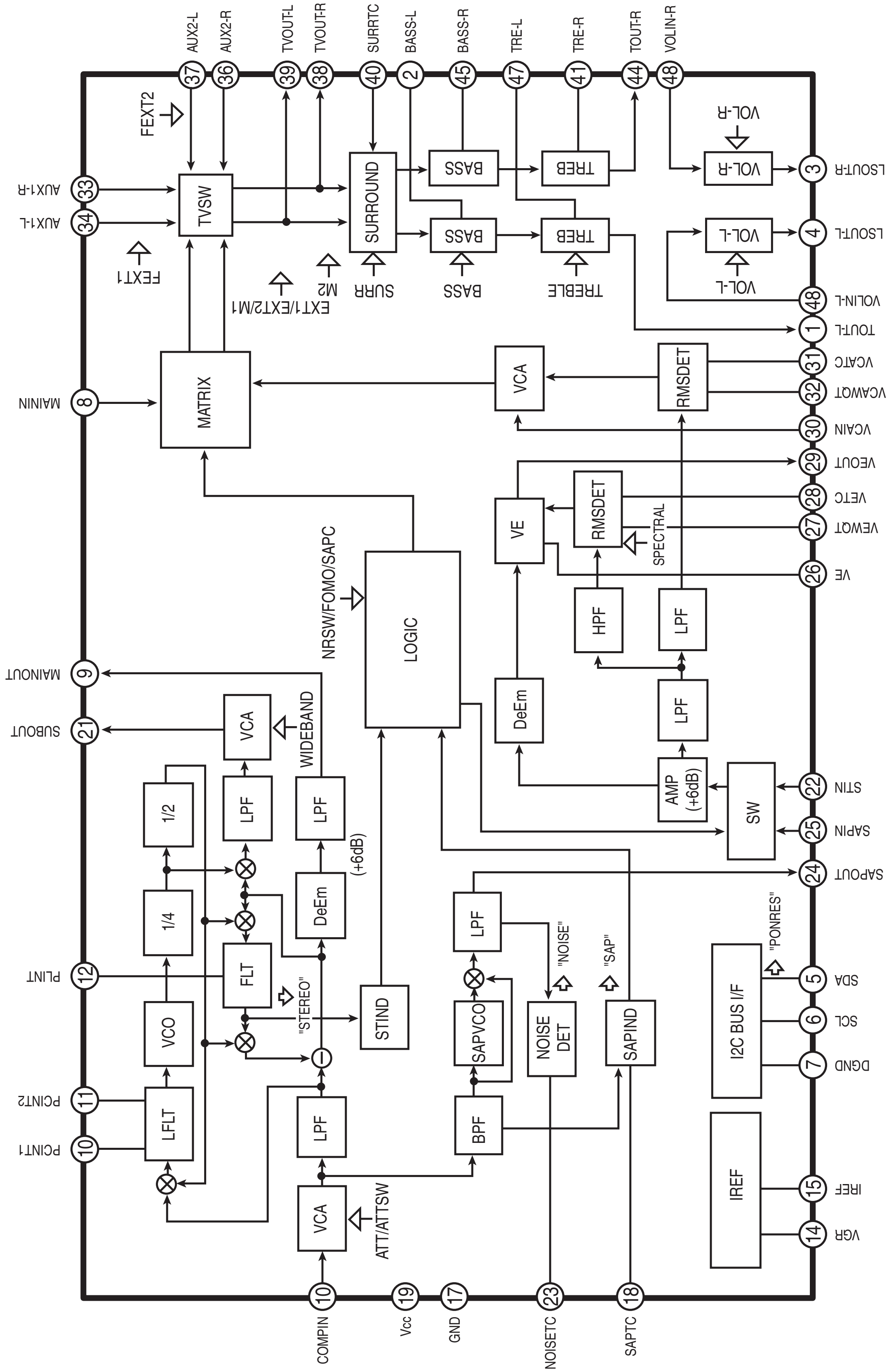
Video SW

SW1	SW2
L:AV1	L:AV2-S
H:AV2	H:DM-S

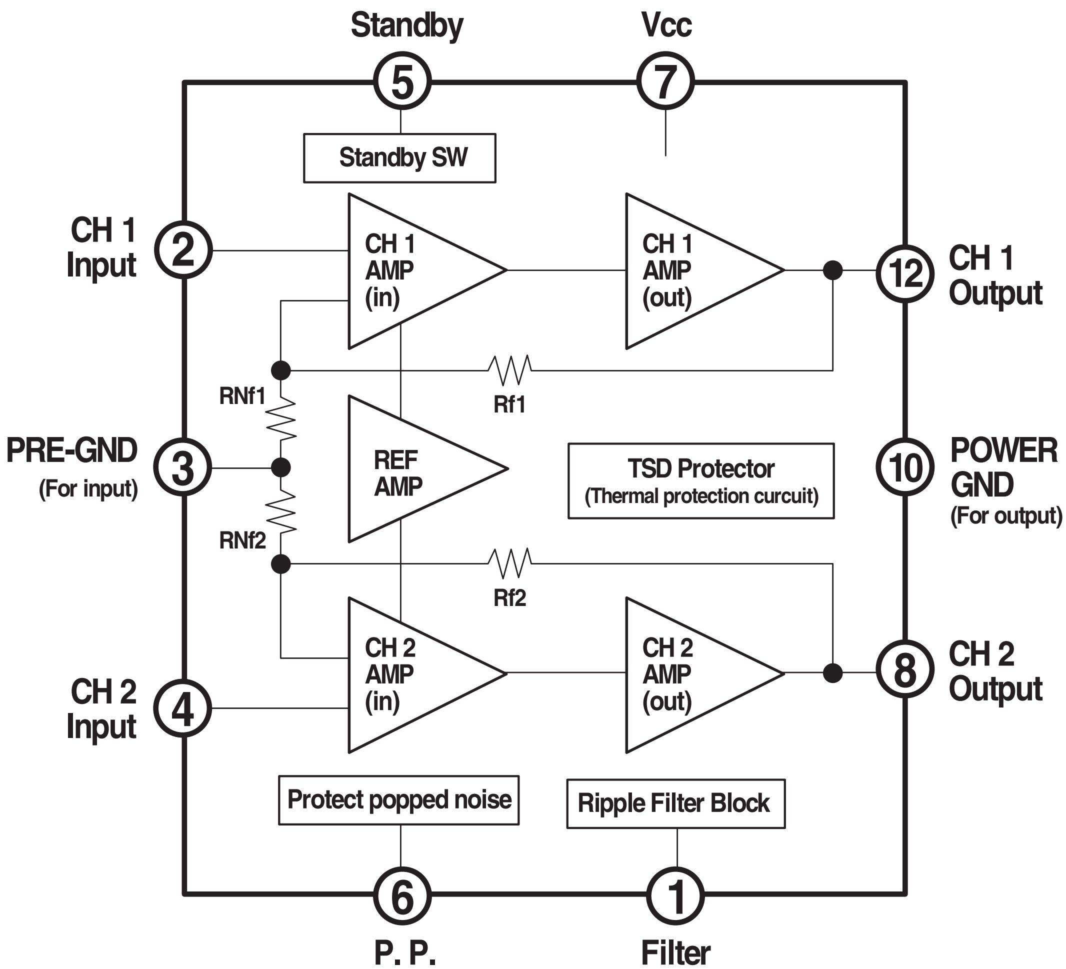
Audio SW

	SW1	SW2
TV	L	L
AV1	L	H
AV2	H	L
DM	H	H

IC3401 AUDIO PROCESSOR BLOCK DIAGRAM

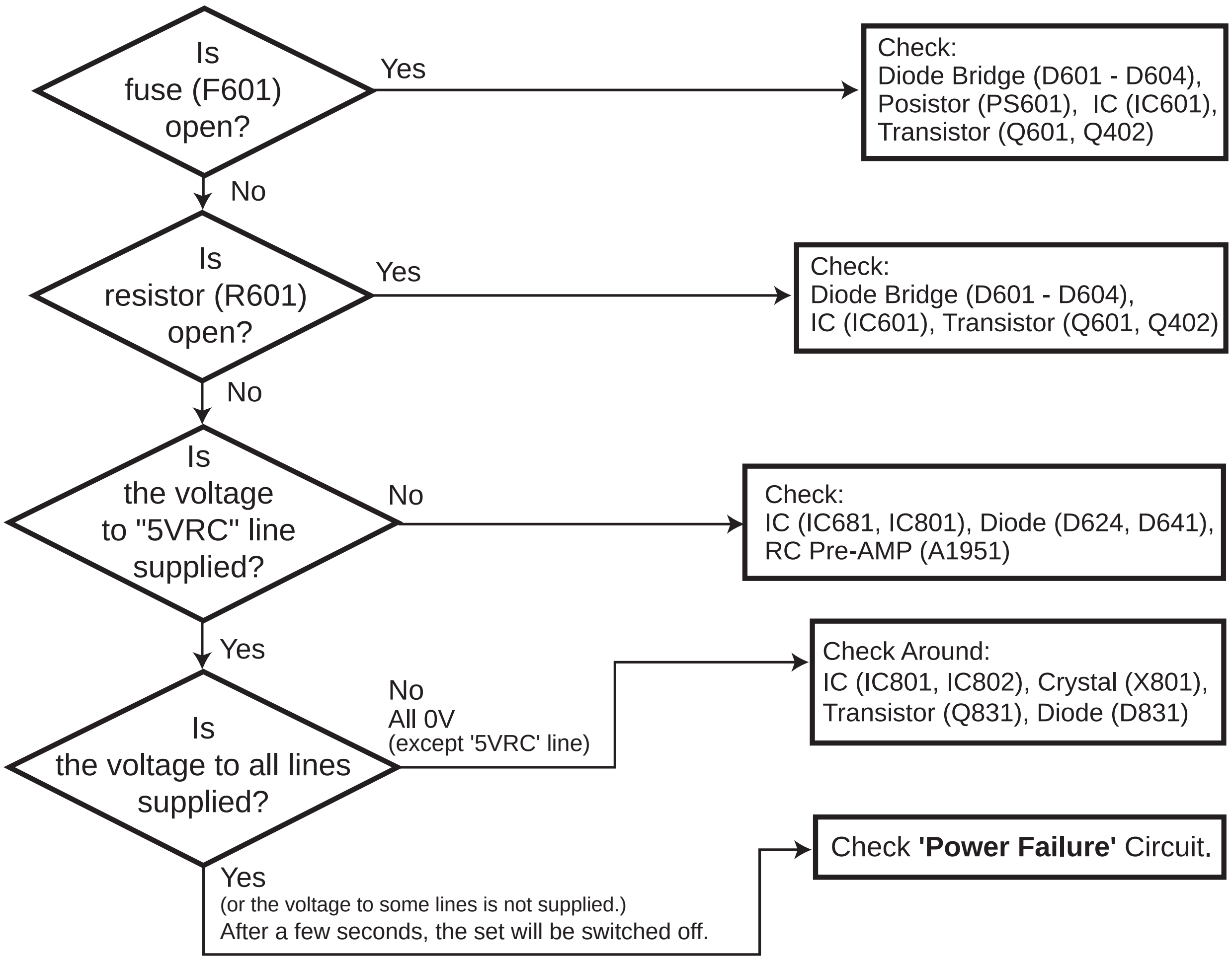


IC002 AUDIO AMP BLOCK DIAGRAM

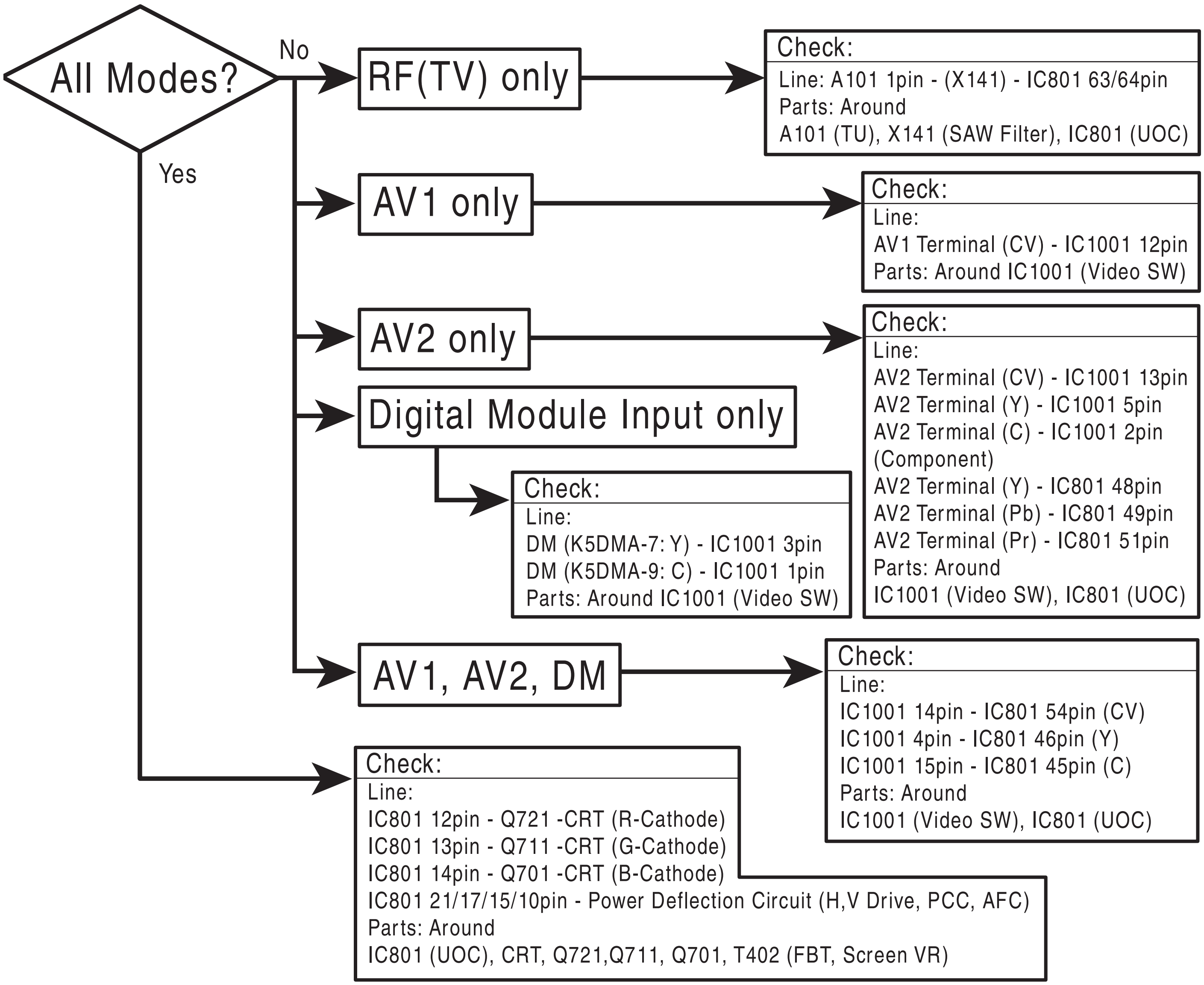


TROUBLESHOOTING FLOW CHARTS

NO POWER

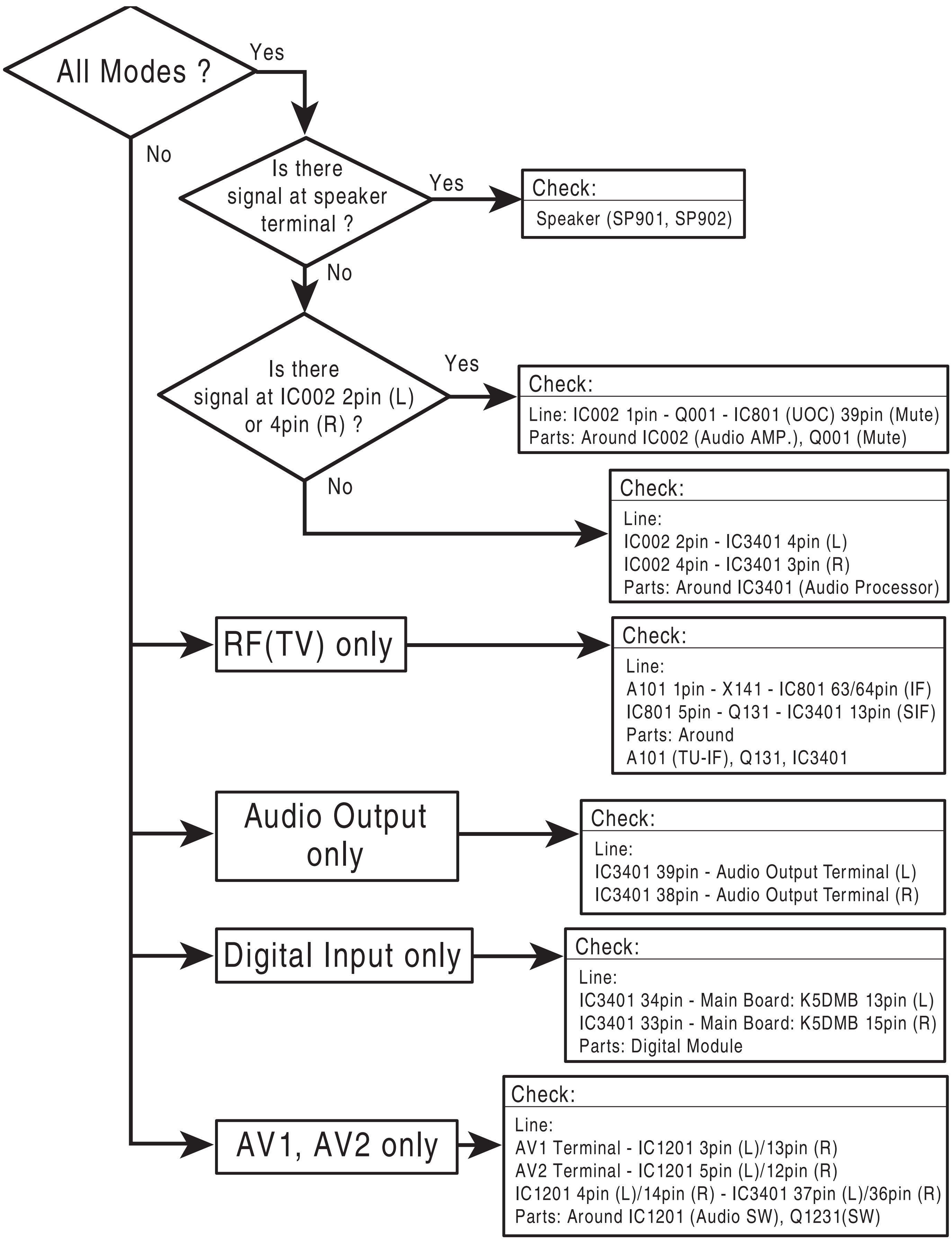


NO PICTURE


All Modes?
No
Yes
RF(TV) only
Check:
Line: A101 1pin - (X141) - IC801 63/64pin
Parts: Around
A101 (TU), X141 (SAW Filter), IC801 (UOC)
AV1 only
Check:
Line:
AV1 Terminal (CV) - IC1001 12pin
Parts: Around IC1001 (Video SW)
AV2 only
Check:
Line:
AV2 Terminal (CV) - IC1001 13pin
AV2 Terminal (Y) - IC1001 5pin
AV2 Terminal (C) - IC1001 2pin
(Component)
AV2 Terminal (Y) - IC801 48pin
AV2 Terminal (Pb) - IC801 49pin
AV2 Terminal (Pr) - IC801 51pin
Parts: Around
IC1001 (Video SW), IC801 (UOC)
Digital Module Input only
Check:
Line:
DM (K5DMA-7: Y) - IC1001 3pin
DM (K5DMA-9: C) - IC1001 1pin
Parts: Around IC1001 (Video SW)
AV1, AV2, DM
Check:
Line:
IC1001 14pin - IC801 54pin (CV)
IC1001 4pin - IC801 46pin (Y)
IC1001 15pin - IC801 45pin (C)
Parts: Around
IC1001 (Video SW), IC801 (UOC)
Check:
Line:
IC801 12pin - Q721 -CRT (R-Cathode)
IC801 13pin - Q711 -CRT (G-Cathode)
IC801 14pin - Q701 -CRT (B-Cathode)
IC801 21/17/15/10pin - Power Deflection Circuit (H,V Drive, PCC, AFC)
Parts: Around
IC801 (UOC), CRT, Q721,Q711, Q701, T402 (FBT, Screen VR)

TROUBLE SHOOTING FLOW CHARTS (Cont.)

NO SOUND



CONTROL PORT FUNCTION

System Control Pin (UOC : IC801)

Pin	Name	Function	I/O	Description
23	S00	SOUT for DM	I/O	
24	SIO	SIN for DM	IN	
25	SCLK	SCLK for DM	OUT	
26	INT3	RC in	IN	Active : Low
27	SDA0	IIC SDA	I/O	
28	SCK0	IIC SCL	IN	
29	P17	Power SW	OUT	(TV) ON:High
30	P16	Power Failure / ACK	OUT	(P-F) Active : Low, (ARK) Bus release : Low
31	SDA1	Bus SDA	I/O	
32	SCL1	Bus SCL	OUT	
33	XT1	Xin	IN	
34	XT2	Xout	OUT	
35	Vcc	Power in		5Vdc
36	AN4	Key in	IN	
37	AN5	Beam current in	IN	
38	AN6	RF AGC in	IN	
39	AN7	Audio Mute	OUT	Mute ON : Low
40	RESET	RESET in	IN	Active : Low
41	PLL	FILT	OUT	
42	CPU GND	CPU GND	-	

System Control Pin (I/O Expander : IC803)

Pin	Name	Function	I/O	Description
1	Vcc	Power in		5Vdc
2	DA OUTPUT0	Not used	OUT	Open
3	DA OUTPUT1	Not used	OUT	Open
4	N.C.			
5	I/O 7	S Detect Input	IN	S : Low
6	I/O 6	DM CS	OUT	
7	I/O 5	Not used	OUT	
8	I/O 4	Not used	OUT	
9	GND	GND		
10	I/O 3	SCLK for DM	OUT	Not used
11	I/O 2	NORMAL SW	OUT	PIXSHAPE Normal : High
12	I/O 1	AV SW2	OUT	
13	I/O 0	AV SW1	OUT	
14	ADDRESS	(Open)	IN	
15	CLK	CLK	OUT	To LA76952 (pin32)
16	SDA	SDA	OUT	To LA76952 (pin31)

AV Switch (Pin12&13)

Video Switch	
SW1	SW2
L: AV1	L: AV2-S
H: AV2	H: DM-S

Audio Switch		
	SW1	SW2
TV	L	L
AV1	L	H
AV2	H	L
DM	H	H

For parts or service contact

Sanyo Manufacturing Corporation
P.O. Box 2000
3333 Sanyo Road
Forrest City, Arkansas 72335-2000

March / 2007 SMC

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MODEL HT27547 Chassis No. 27547-02

SCHEMATIC DIAGRAMS

NOTES ON SCHEMATIC DIAGRAMS

1. All resistance values in ohms K=1,000 M=1,000,000.
2. Resistors specified with resistance value are "1/6DJ."
3. Resistors specified with type of resistor, tolerence and resistance value are "1/4."
4. Unless otherwise noted on schematic, all capacitor values less than 1 are expressed in μF (Micro Farad), and the values more than 1 are in pF.
5. All capacitors are 50 WV rating unless oterhwise noted.
6. Unless otherwise noted on schematic, voltage reading taken with VOM from point indicated to chassis ground. Voltage reading taken using color-bar signal VHF channel 5, all controls at normal. Line voltage at 120 volts. Some voltages may vary with signal strength.
7. Waveforms were taken with color-bar signal and controls set for normal picture. Waveforms marked with an ✻ may vary with signal strength.
8. The Symbol (fusible resistor symbol) indicates a fusible resistor, which protects the circuit from possible short circuits.
9. Parts enclosed with ☐ are related with X-radiation.
10. Isolation border line. Cold Side / Hot Side
11. Schematic part location numbers may not always match the schematic symbols. The schematic symbols and part descriptions are correct and should be used. The part descriptions will be listed under the location number in the parts list.
12. "X" Part not used.
    "J" Jumper wire.

ELECTROSTATICALLY SENSATIVE DEVICES

Many solid-state devices (especially Integrated Circuits) are Electrostatically Sensitive, and, therefore, require special handling techniques as described under "Servicing Electrostatically Sensitive Devices," on page two in this service literature.

SERVICE NOTES:

1. When replacing parts on circuit boards, clamp the lead wires to terminals before soldering.
2. When replacing high wattage resistors on circuit board, keep the resistor body 10 mm (3/8) from circuit board.
3. Keep wires away from high voltage and high temperature components.

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A ⚠ ON THIS SCHEMATIC DIAGRAM DESIGNATE COMPONENTS WHOSE VALUES ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A ⚠ NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

X-RADIATION WARNING NOTE

THIS TV CONTAINS CRITICAL PARTS TO PROTECT AGAINST X-RADIATION. NOMINAL 2ND ANODE VOLTAGE IS 30.1KV AT ZERO BEAM CURRENT AT 120 VOLTS AC LINE, AND MUST NOT EXCEED 32.2KV UNDER ANY OPERATING CONDITION. SEE HIGH VOLTAGE CHECK ON PAGE 10.

REPLACEABLE TRANSISTORS AND DIODES

LIST OF REPLACEABLE TRANSISTORS

(2SA933S TYPE)

	14TH CODE	2SA933S	2SA1015	2SA564A
AB	7T200181	R	Y,GR	R
AC	7T200182	Q,R	O,Y,GR	Q,R

(2SA1037K CHIP TYPE)

	14TH CODE	2SA1179	2SA1037
AJ	7T200221	M6,M7	R,S

(2SC1740S TYPE)

	14TH CODE	2SC1740S	2SC945A	2SC1815
AD	7T200183	Q,R,S	QA,PA	Y,GR
AE	7QT00202	Q,R,S	RA,QA,PA	O,Y,GR

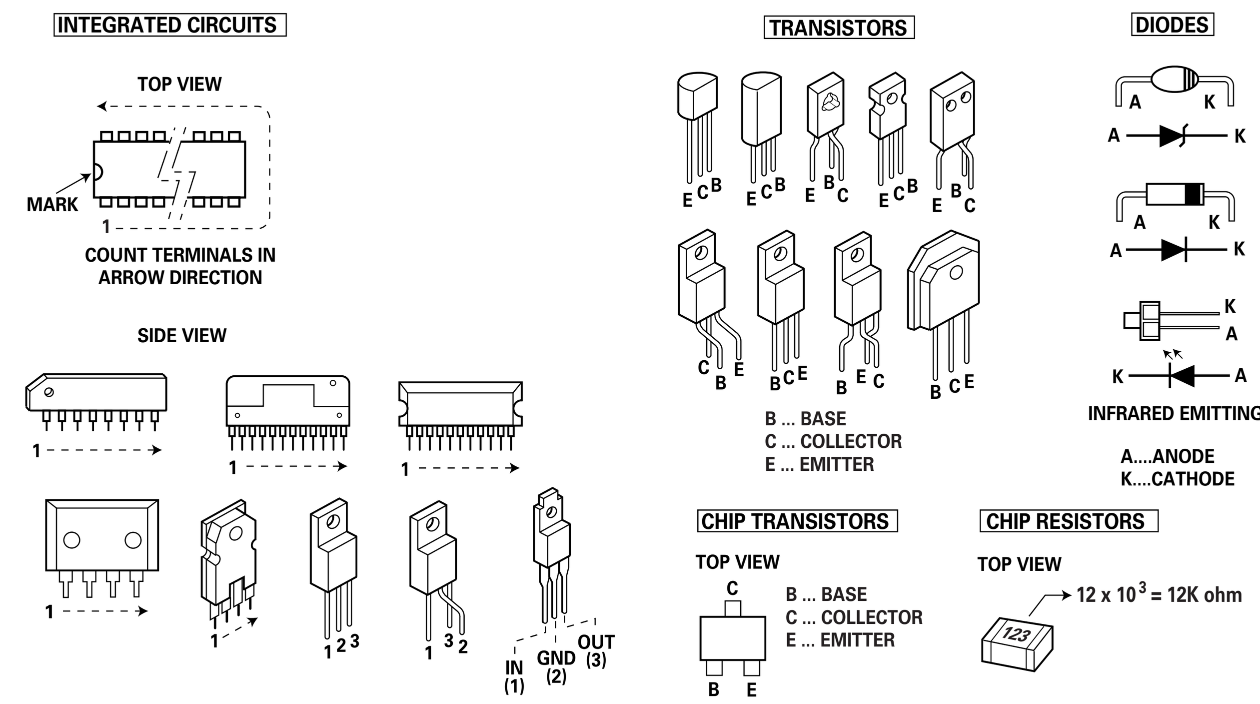
(2SC2412K CHIP TYPE)

	14TH CODE	2SC2812	2SC2412K
AH	7T200220	L6,L7	R,S

LIST OF REPLACEABLE DIODES

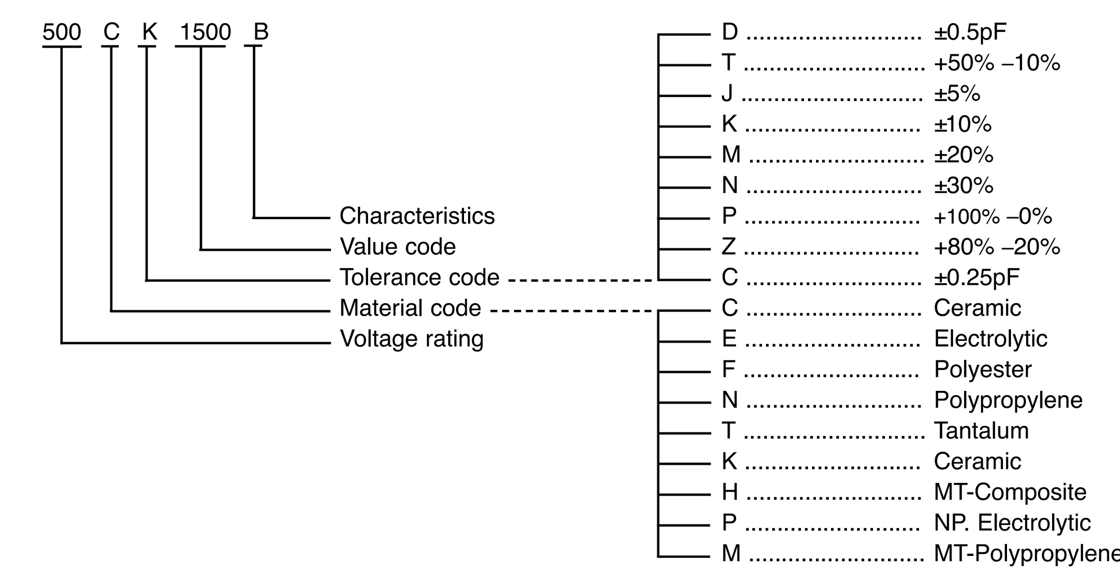
	14TH CODE	DIODE NAME
R	7DD00019	1S1555,1S2473,1S2076,DS442,1N4148
AA	7DD00192	1S1555,1S2473,1S2076,DS442,1N4148 1SS176,1SS133,GMA01
M	7ED00025	1SS176,GMA01,1SS133
P	7DD00021	1S1553,1S2076A,1S2471,1N4148

PIN LAYOUTS

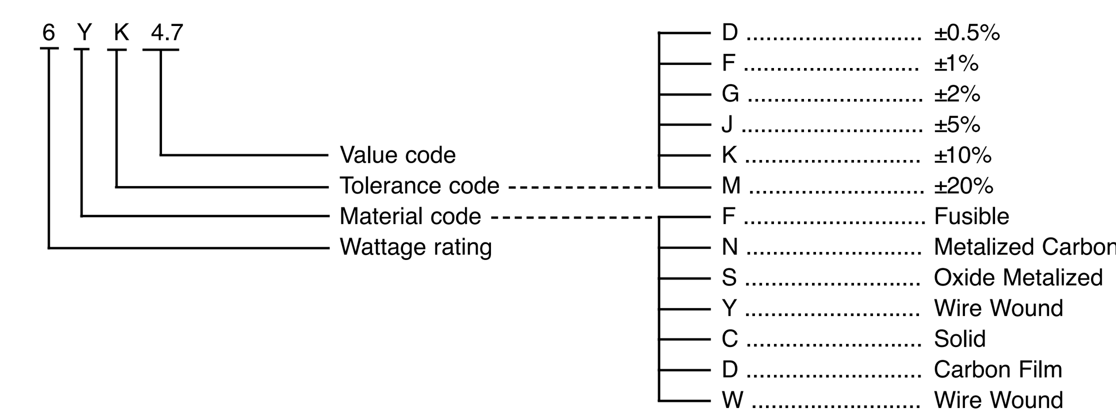


CAPACITOR AND RESISTOR CODE CHART

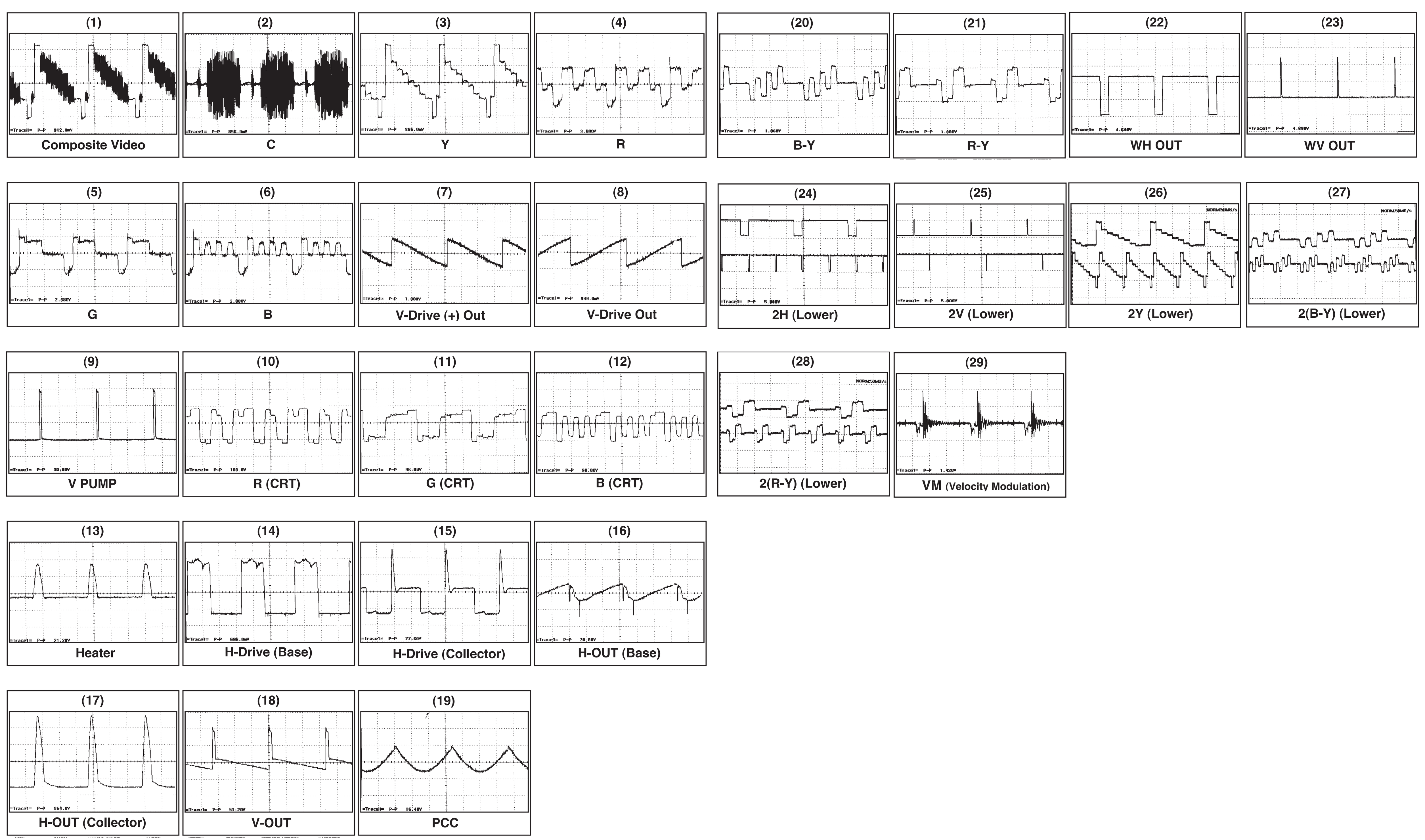
CAPACITOR (Example)




RESISTOR (Example)



SCHEMATIC WAVEFORMS



MODEL HT27547 Chassis No. 27547-02



ELECTROSTATICALLY SENSATIVE DEVICES

Many solid-state devices (especially Integrated Circuits) are Electrostatically Sensitive, and, therefore, require special handling techniques as described under "Servicing Electrostatically Sensitive Devices," on page two in this service literature.

CAUTION 6A 125V

FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH THE SAME TYPE 6A, 125V FUSE.
ATTENTION: POUR MAINTENIR LA PROTECTION CONTRE LES RISQUES D' INCENDIE UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE 6A, 125V.